MECCANO® Magazine

JANUARY 1968

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HOBBY MAGAZINE

MAP

IT'S BACK!

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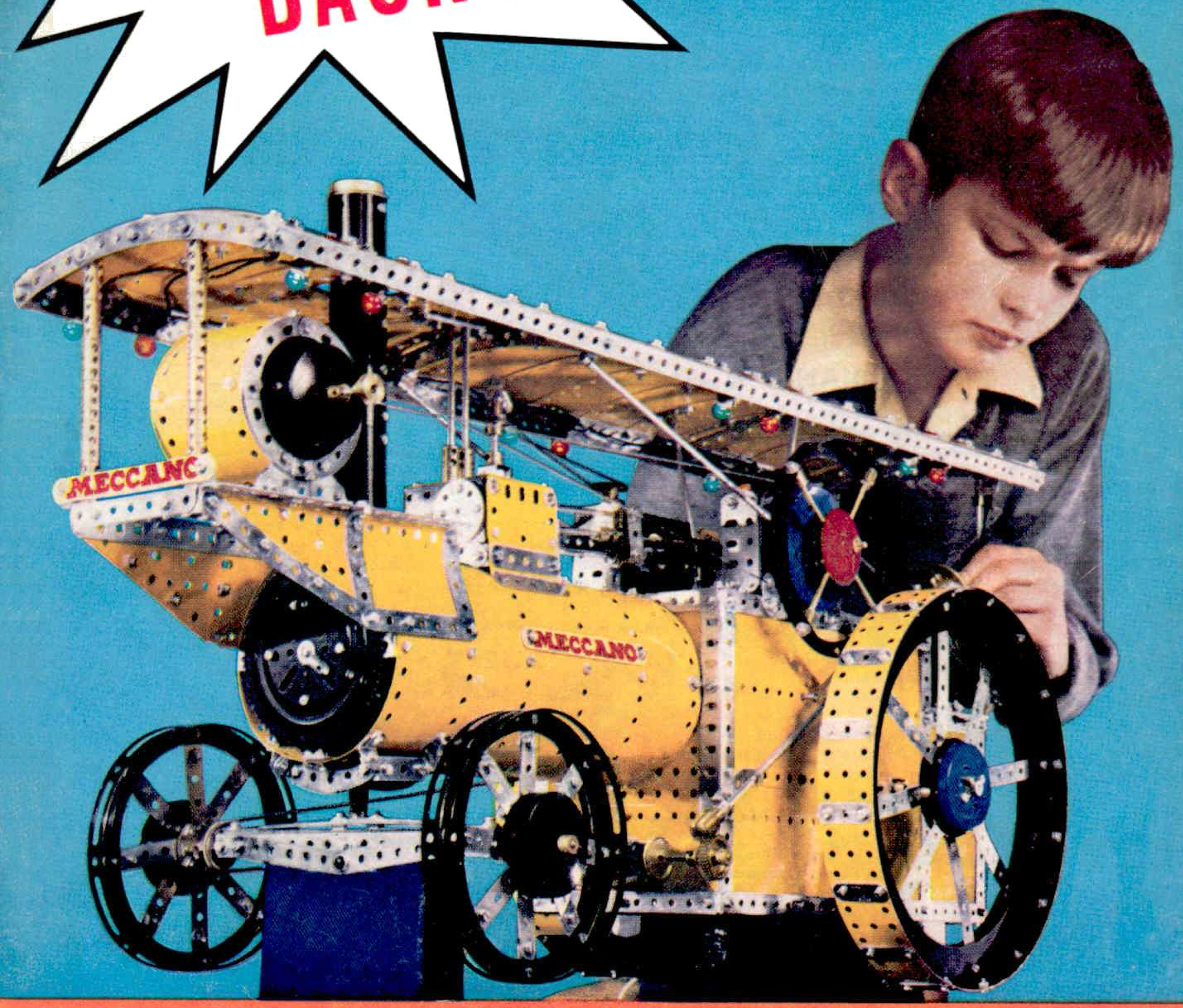

THE NEW Young Modellers' MAGAZINE

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Just the job for Christmas!

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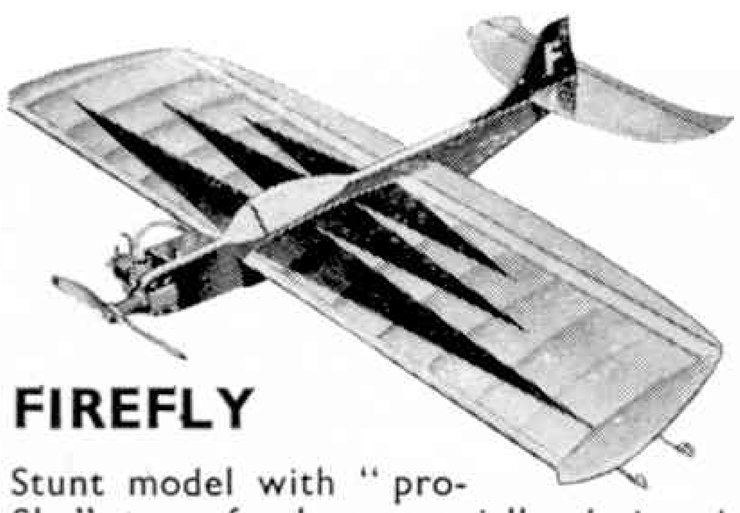
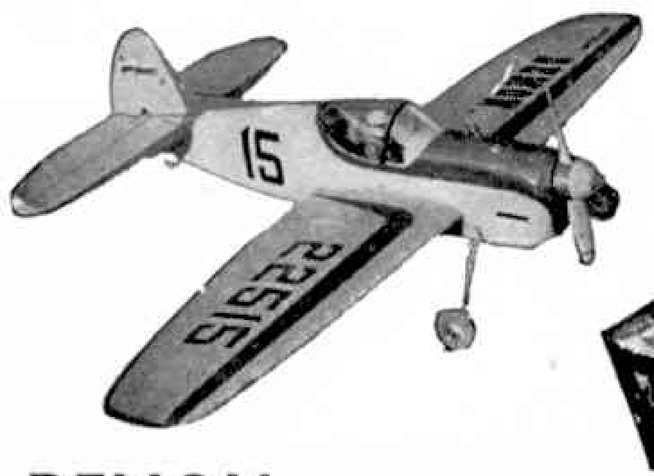


FIREFLY

Stunt model with "profile" type fuselage, specially designed for engines under 1 c.c. Kit contains die-cut parts. Wingspan 20 in. **20/-**

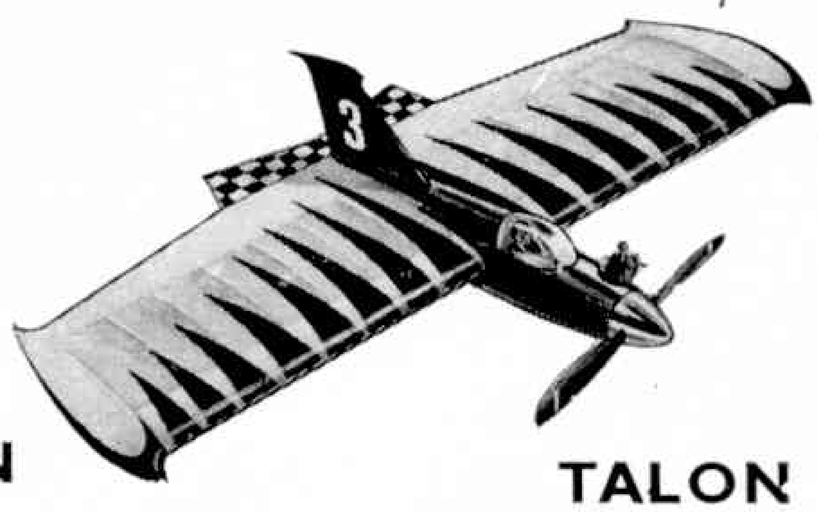


DEMON

Class A team racer to S.M.A.E. specification. Kit contains die-cut parts. For engines up to 2.5 c.c. Wingspan 30 in. **36/10**

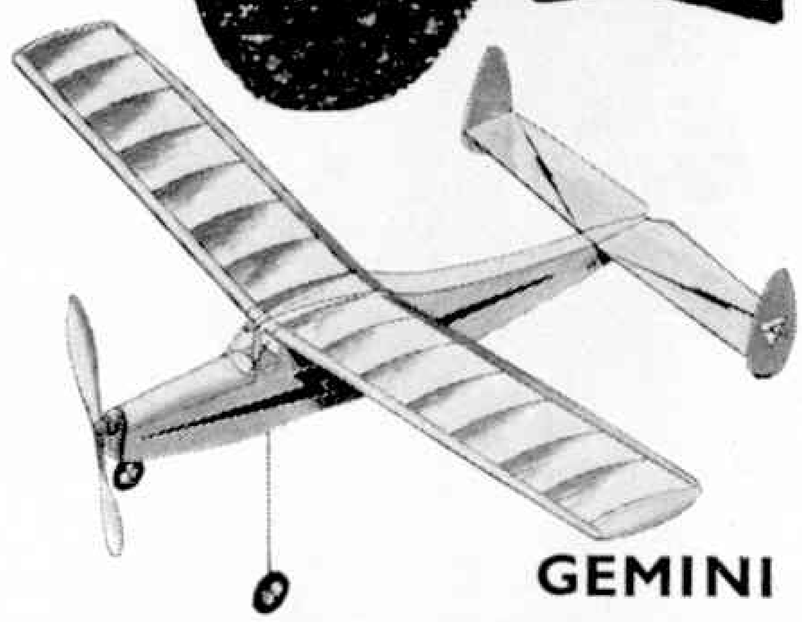
RADIAN

with coupled wing flaps and elevators For .049 motors. Kit contents include die-cut parts, stunt tank, preformed U/C, formed canopy, all hardware. Wingspan 22 in. **21/7**



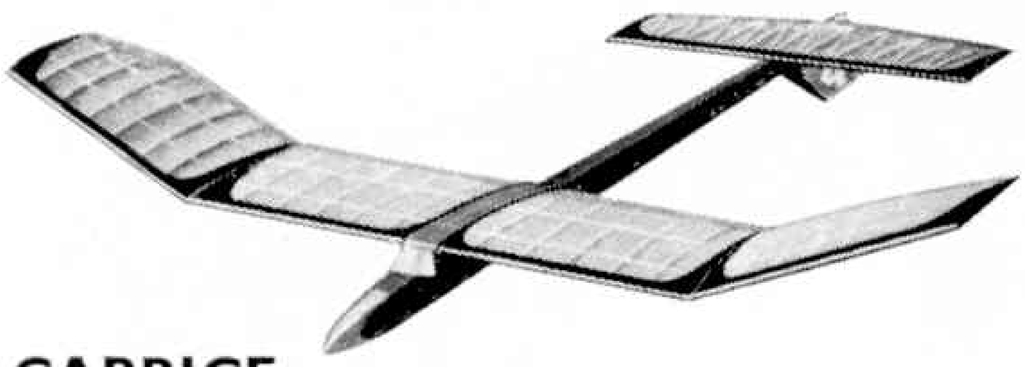
TALON

Combat design of considerable strength. Easy and quick to build. A fully aerobatic model that is great fun to fly. For 2.5 to 3.5 c.c. engines. Wingspan 32 in. **31/-**



GEMINI

Duration model with all fuselage parts, tailplane, and fins in pre-cut, pre-decorated sheet balsa. Wingspan 22 in. **10/2**



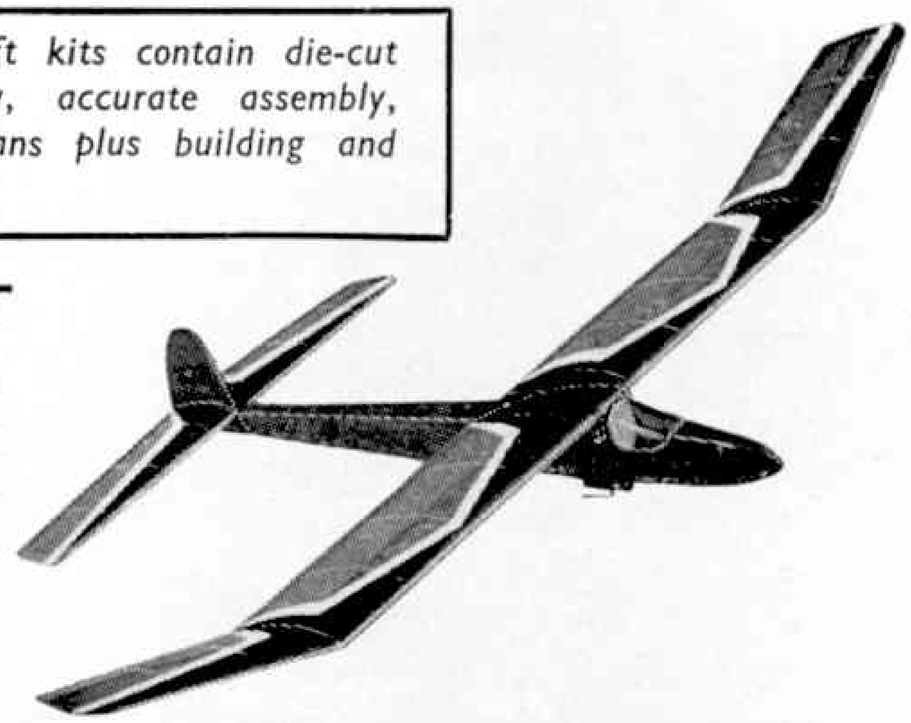
CAPRICE

High performance contest glider. Rugged and straightforward to build. Kit features die-cut parts for speedy assembly. 51 in. wingspan. **20/-**

All these Keilkraft kits contain die-cut parts for speedy, accurate assembly, and full size plans plus building and flying instructions.

CONQUEST

Towline glider for beginners, with a very good performance. Kit contains die-cut parts. Wingspan 30 in. **10/-**



KEILKRAFT

RIGHT from the start!

See this famous range at the local model shop

MECCANO® Magazine

MAP HOBBY MAGAZINE

Publishers of Aeromodeller, Model Boats, Model Cars, Model Engineer, Radio Control Models, Model Railway News.

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Editor:
JOHN FRANKLIN

Assistant Editor:
John Brewer

Consulting Editor for Meccano Ltd:
J. D. McHard

Advertisement Manager:
Roland Sutton

January 1968 Volume 53 Number 1

Meccano Magazine, founded 1916

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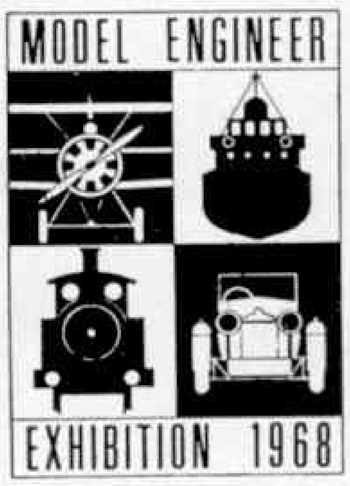

FRONT COVER

Meccano captures the glory of a bygone era! This magnificent Showman's Traction Engine is constructed entirely from current Meccano parts. Measuring 30 in. long by 15 in. high it has flashing lights, operating pistons, flywheel, governor and drive to the generator. This is a standard Meccano display model and involved some 60 hours of work in its construction.

NEXT MONTH . . .

Full size plans for an easy to construct, electric-powered paddle boat, and a Swing Wing, all-balsa, Catapult Glider as the month's half-size Simple Balsa Model plan. John W. R. Taylor on the Douglas Skyraider, as used in Vietnam, with a photo review of the Revell Skyraider plastic kit. Railway fans are not forgotten, with Trackside Construction: building an OO gauge station from card and wood; the A.B.C. of Locomotives, and prototype Railway Relics. The identification of metals by Chemistry, Electronic Photoswitch, Have You Seen?, together with Dinky Toy News, Meccano Models and Among the Model Builders, make this an issue you must not miss. Watch for the Skyraider cover painting!

This periodical is sold subject to the following conditions: that it shall not, without the written consent of the publishers, be lent, re-sold, hired out or otherwise disposed of by way of Trade at a price in excess of the Recommended Maximum Price and that it shall not be lent, re-sold, hired out or otherwise disposed of in a mutilated condition, or in any unauthorised cover by way of Trade; or affixed to or as part of any publication of advertising, literary or pictorial matter whatsoever. Second class postage rates paid at New York, N.Y. Registered at the G.P.O. for transmission by Canadian Post. American enquiries regarding news stand sales should be sent to MECCANO MAGAZINE, Eastern News Distributors Inc., 155 West 15th Street, New York, N.Y. 10011, U.S.A.

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MODEL AERONAUTICAL PRESS LTD.
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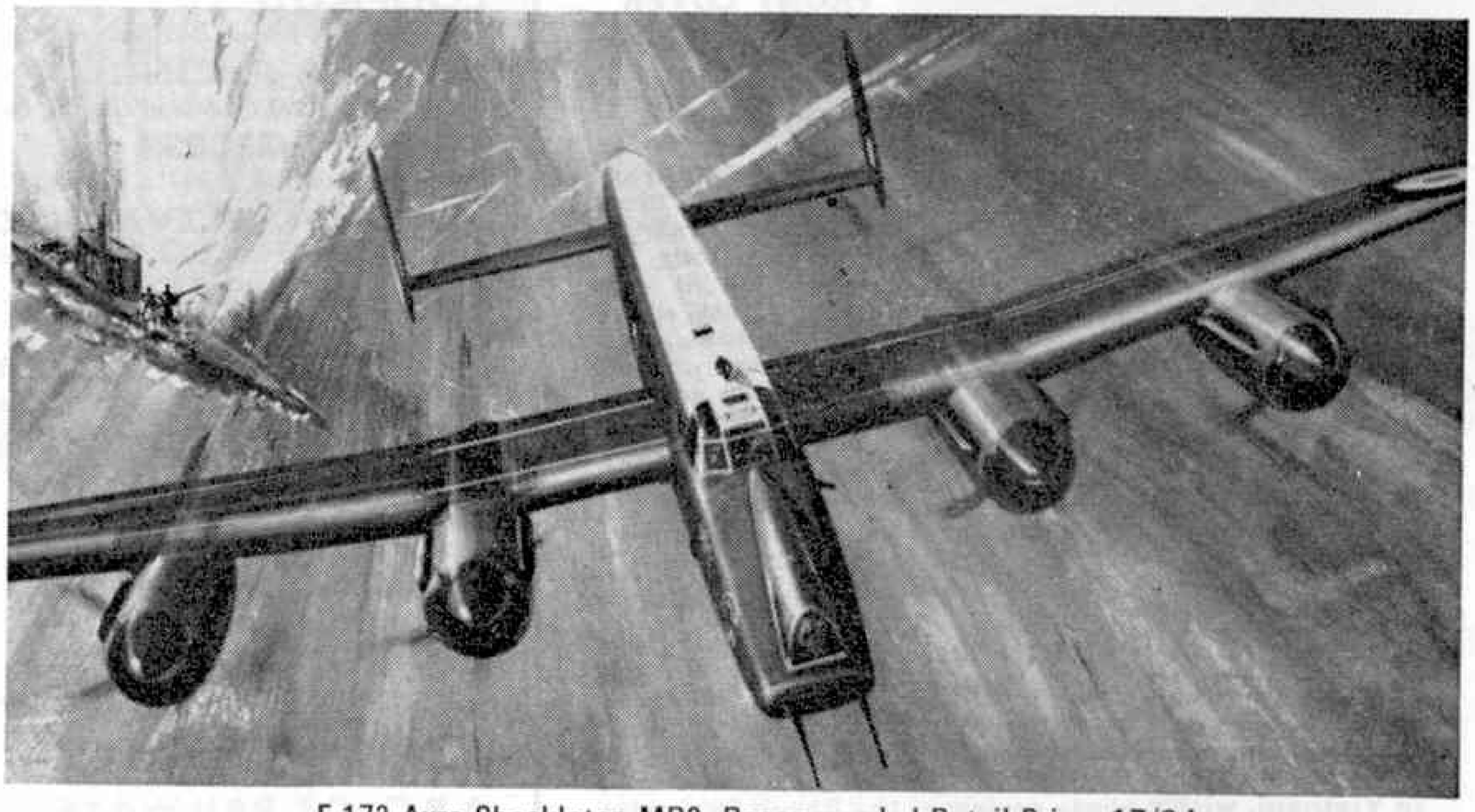
HURRICANE! TEMPEST! SHACKLETON!

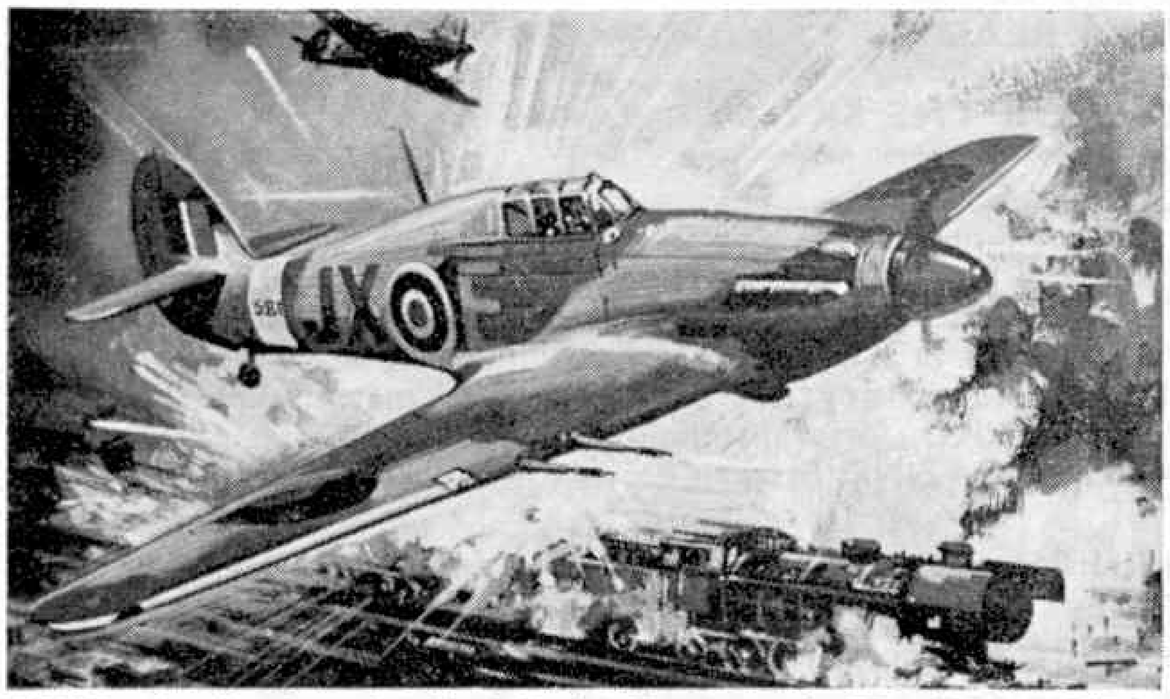
3 NEW FROG KITS MAKE 6 VERSIONS OF THESE GREAT WORLD WAR 2 PLANES!

New from Frog, the famous Hurricane 2c of No. 1 Squadron RAF, flown from Tangmere, and a sea Hurricane version. Or Pierre Closterman's Free French Tempest fighter of No. 3 Squadron RAF or a No. 274 Squadron aircraft. Or the air-sea rescue Shackleton MR3 with RAF or South African Air Force Markings. 3 new kits—6 great planes. Each with a work tray box, easy to follow coloured painting guide, authentic matt transfers and numbered parts.

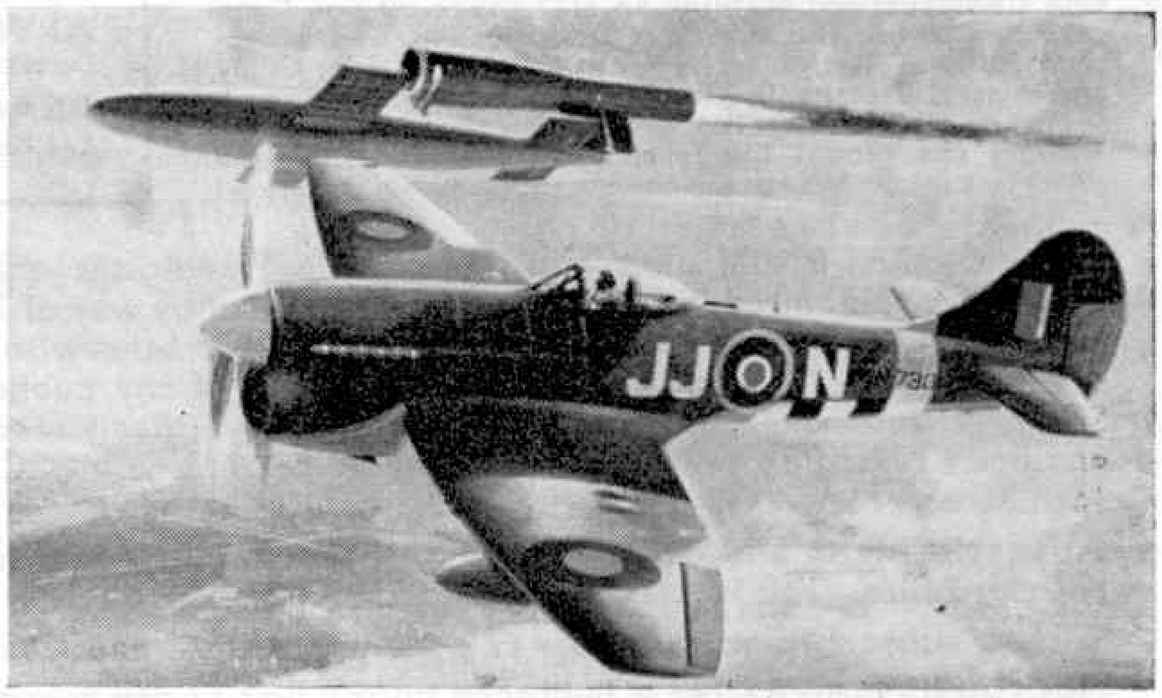
PLUS the Frog Lifeboat kit – accurate and authentic in every detail–to complete the air-sea rescue picture. F.129 North Sea Lifeboat. Recommended Retail Price: 10/10d



F.172 Avro Shackleton MR3. Recommended Retail Price: **17/6d**



F.188 Hawker Hurricane 2c. Black Series. Recommended Retail Price: **2/7d**



F.189 Hawker Tempest MK V. Black Series. Recommended Retail Price: **2/7d**

FROG

THE HIT KITS BRITAIN'S BEST

Made in England by ROVEX INDUSTRIES LIMITED, MARGATE, KENT

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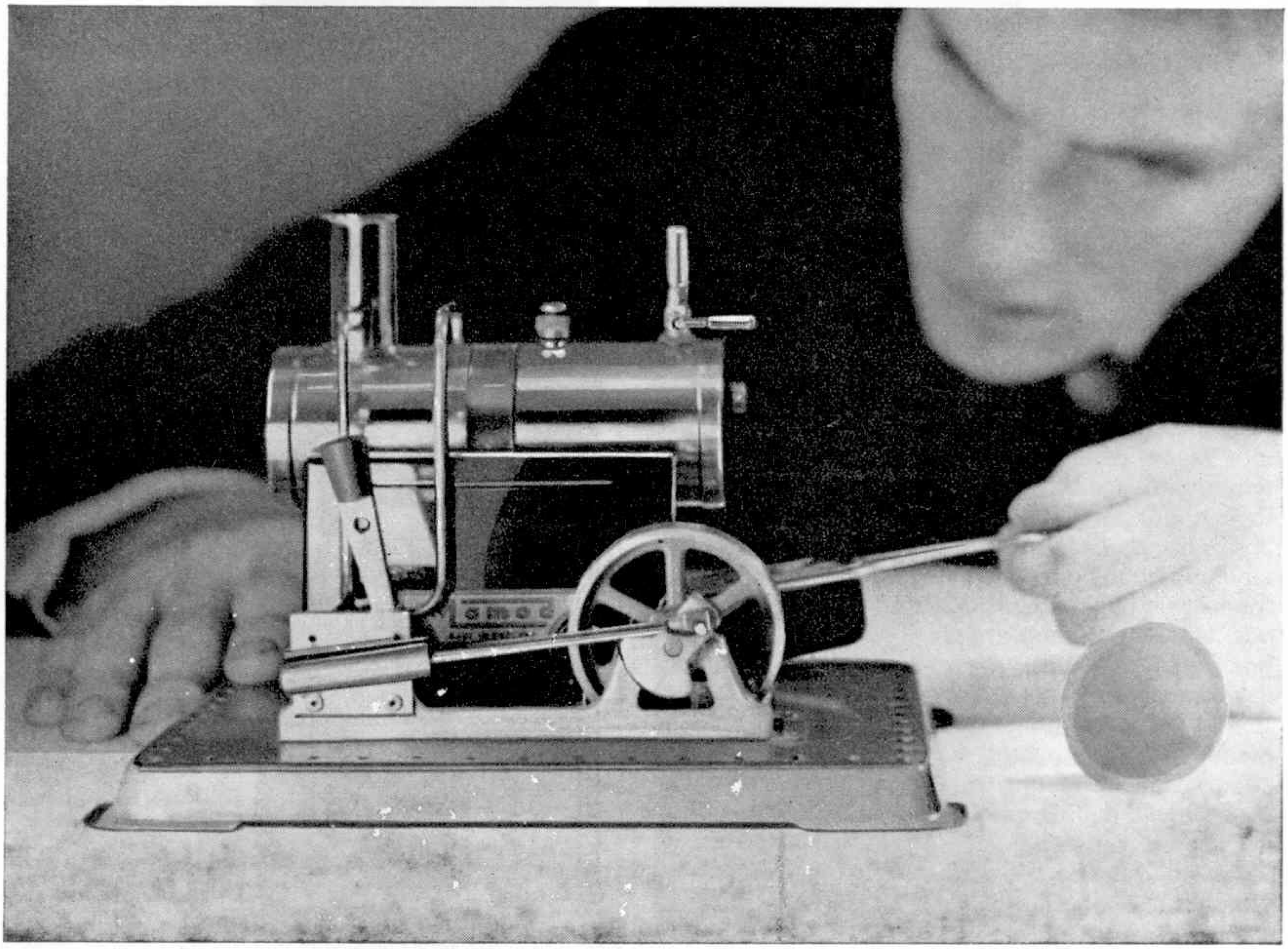
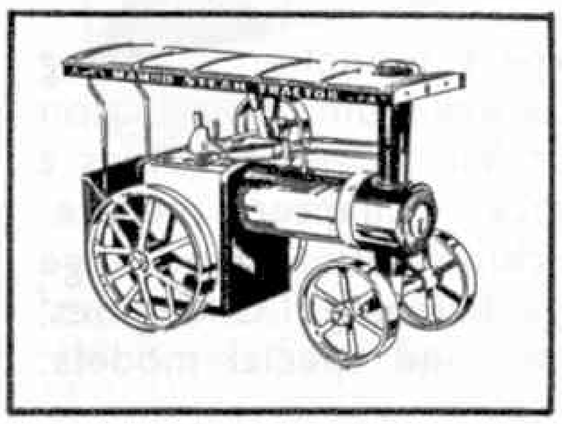
STEAM ENGINES
-BIG

FAVOURITES with young model engineers



Give him a fascinating live steam engine for powering models, boats and miniature tools. Or a life-like steam roller. Or a traction engine that will run for a third of a mile in ten minutes. Mamod steam models are quality-engineered for fun with safety. Prices from 35/9 to 113/3 at leading toy and sports shops.



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steam models

manufactured by
Malins (Engineers) Ltd,, Thorns Road
Quarry Bank, Brierley Hill, Staffs.

KINDLY MENTION "MECCANO MAGAZINE" WHEN REPLYING TO ADVERTISEMENTS

AEROMODELLER ANNUAL 1967/68

Articles include world record holder Wisniewski on Tuned Exhaust Pipes; other speed flying articles; Fuel Tanks for Control liners; Dr. Hawkins on Jap WWII Colour Schemes; Prop Carving; Woodwork for Modellers; Flexwing flying models; plus drawings of the world's models of the year, including r/c, contest and sports power, Winter Cup, slope soarers, chuck gliders, helicopters, indoor . . .

128 pages, size 8½ x 5½ in.

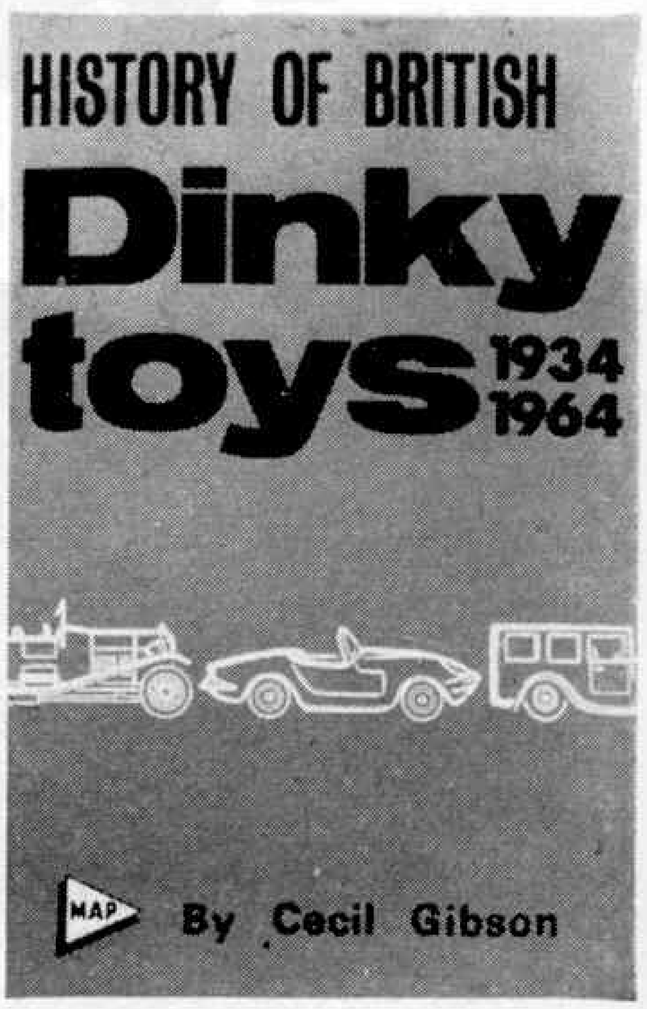
10/6

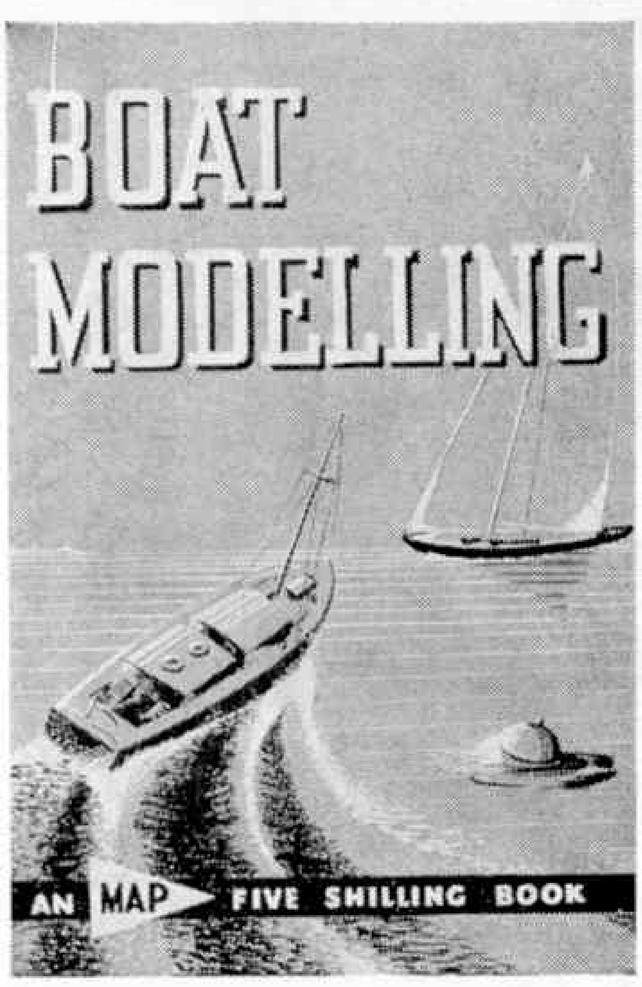
HISTORY OF BRITISH DINKY TOYS 1934-64

It contains not only a short history of the original company which produced Dinky Toys, but also a year-to-year description of the cars issued, with a fine selection of photographs devoted mainly to earlier examples, and a series of tables listing all Dinky Toys, 1934-64 in numerical order.

15/-

8½ x 5½ in., 152 pages. Cloth bound, gold blocked spine, Two-colour dust cover. 76 photo-illustrations.



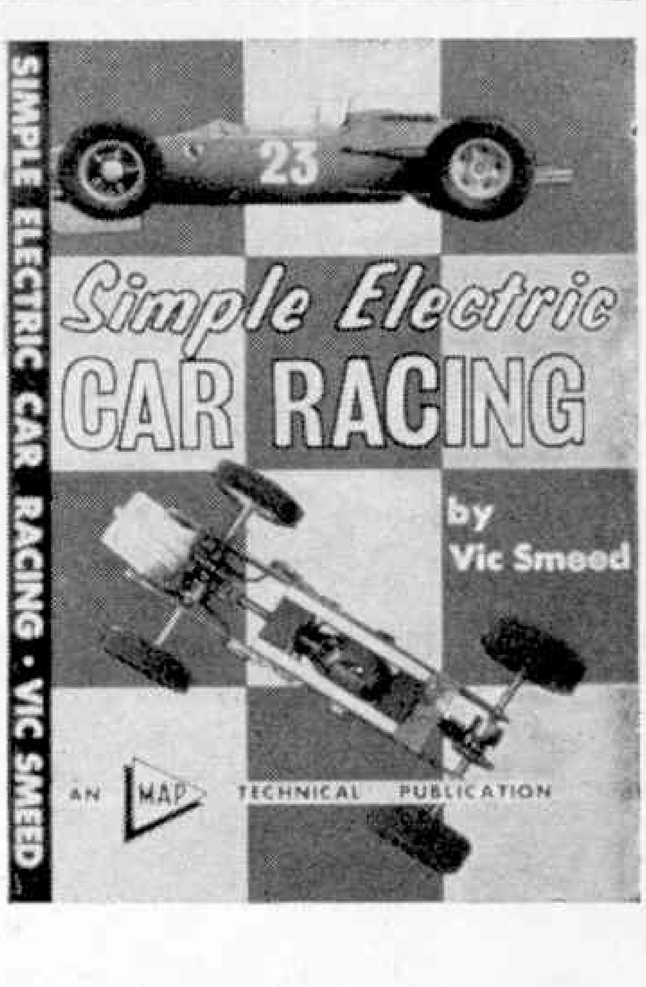


8½ x 5½ in., 96 pages. 223 line drawings and 8 pages of art plates showing 50 photographs.

5/-

BOAT MODELLING

A book for the not-so-expert modeller covering every aspect of model boat work from construction through to sailing. Author Vic Smeed provides a wealth of practical assistance. Chapters include: Tools and materials, hard chine hulls, round bilge hulls: superstructure fittings, finishing: I.C. engines, electric motors, hydroplanes and special models: operation: radio control.



10/6

7¼ x 4⅞ in., 104 pages, 65 photos, 37 line drawings. Cloth and board cover.

SIMPLE ELECTRIC CAR RACING

The ideal introduction to electric cars—practical survey giving the facts of successful car and track construction.

The answers to all the questions likely to arise in building cars and tracks from scratch: a great proportion of its content will also be invaluable to those who buy commercial cars and track.

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- ☐ A. N. Beck
- ☐ Dinky Toys
- ☐ Electronixs
- ☐ Frog
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- ☐ Lotts Bricks
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XMAS COMPUTER

BUILD YOUR OWN PRESS-BUTTON PROBLEM SOLVER!

" What's one and one and one and one and one and one and one and one ? "

" I don't know," said Alice. " I lost count."

" She can't do arithmetic," the Red Queen declared.

Lewis Carroll

This is a Xmas project with a difference. Now you can build your own computing unit!

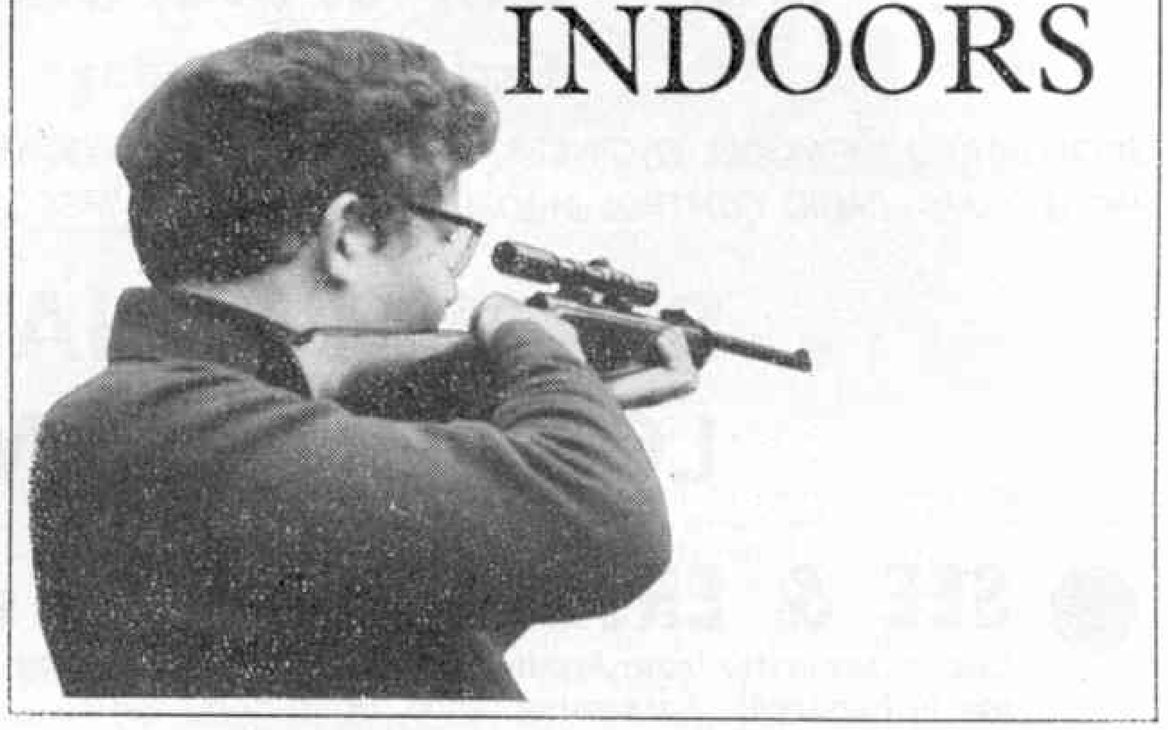
MAC-1 is a Mini-Analog Computer, which multiplies and divides, does logs, trig, squares and square roots—all at the touch of a button. To construct it you need a screw-driver and an hour or so. To operate it—and learn how analog computers solve problems—you simply follow the elementary instructions in the Handbook. Analog computers are used by space scientists to work out problems in electronics, physics and mechanics. And the Handbook is an excellent introduction to the space generation!

MAC-1 brings the world of computers to your own table-top; a high speed electrical calculator that saves hours on problems which are tedious by long-hand methods.

A complete kit for MAC-1—including the battery power supply—is 70s. 6d. OR you can order the unit built and ready-for-use for 79s. 6d. (for either please add 6/- carriage). You can also write for our complete catalogue of exciting computer products—but HURRY!

I-COR SYSTEMS (File MM7) 4 Manor Road London, N.16

START HIM SHOOTING INDOORS



It's safe and there's no need to make him wait for his first Webley. It's simple to use that garage, attic or small room to create your own shooting range. It's fun. In these long winter evenings you'll teach your youngster the arts of shooting so that soon he'll be an accurate safe shot. Webley air rifles and pistols give the young beginner and the older shot all the excitement and pleasure of shooting. The .177 calibre is the target model, and the .22 model for use in the field. The Jaguar and Ranger rifles are for the young shot, light and well made. The simple robust Falcon either in .177 or .22 calibre feels right, shoots right. The superb Webley Mark 3, .177 target model and .22 Sports model is the most outstanding British air rifle sold today. Finally the Junior and Premier Webley air pistols bring service revolver accuracy to target shooting, for young and old alike.

WEBLEY

Prices start at £6 . 19 . 7d. for the Jaguar air rifle kit complete with targetholder, targets, pellets, darts, and oil, or £7 . 2 . 2d. for pistols.

See the full range of Webley airguns at your usual gun stockists or for details of these guns write (enclosing a 4d. stamp) to Webley & Scott Ltd. (Inc. W. W. Greener Ltd.), Dept. MM/AW1, Park Lane, Handsworth, Birmingham 21. Tel: 021-553 3952.

37th MODEL ENGINEER EXHIBITION

3rd - 13th JANUARY 1968

Excluding Sunday

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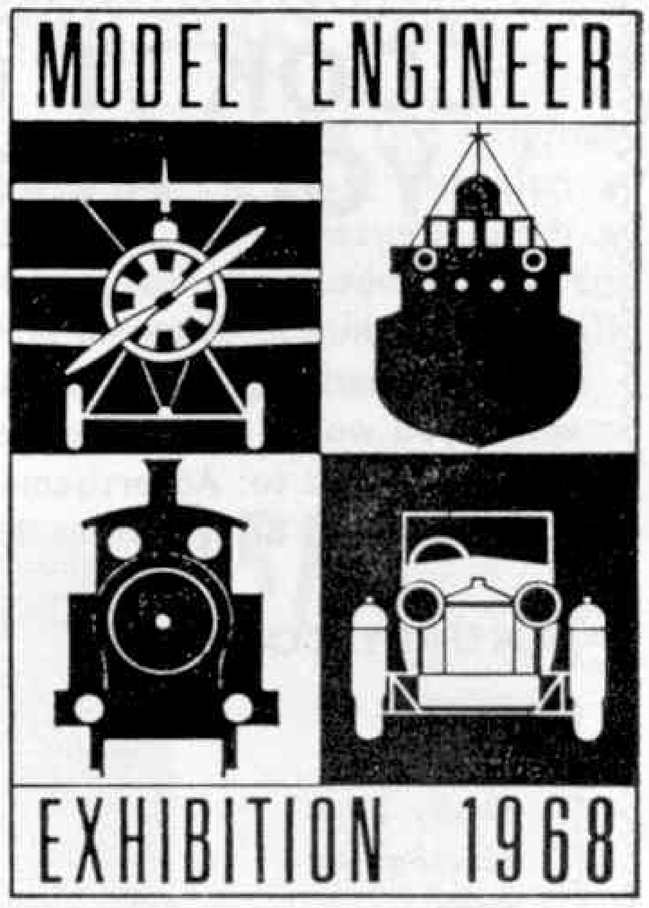


SEE & ENJOY

FIRST TIME EVER ON SHOW ! !! ! A SELECTION OF L.B.S.C's OWN LOCOMOTIVES— fifteen favourites from *Ayesha* to *Mabel* will be on display . . . the chance you have never had before . . . all workers that have put in hundreds of steaming hours. . . .

Plus Turner's Carousel—the model roundabout that captured all hearts when first shown in London earlier this year . . . plus models of all sizes, all kinds, all scales. . . . Many are glittering prize-winners to excite admiration . . . others show the work of young people and beginners. You can be thrilled, encouraged and amazed. . . . Some thirty cups, trophies and other awards to bring out the nation's best, plus generous gifts from home and abroad for competitors. Everything from woodwork to plastic models to skilled lathework to electronic marvels. . . . Something for everyone.

SEE & BUY

from the Model Trade supporting the exhibition with well stocked stands. Not just for show, but select and take away, talk with experts of the trade and be assured that your choices are wise ones. . . . Amongst well-known companies who have already arranged to take stands are: Automodels, Beatties of London, Carneeds, Cromar White, Eltham Models, "Flying Dutchman," E. Keil & Co., King Charles Model Centre, Henry J. Nicholls, Hugh Evelyn, Howell Dimmock, Kennions, Millholme, Myfords, Model Racing Car Centre, Peco, Severn Lamb, Severn Valley, Steam Age, plus Traction Engine Enterprises. Our own M.A.P. Books will be on sale, and members of our staff will be there to answer questions. . . . You can also buy time on Live Steam Feature with passenger hauling and racing on the A.M.F. Car Circuit (managed by Automodels) with valuable prizes daily. . . .

SOUVENIR GUIDE

A very special CHRISTMAS EXTRA issue of *MODEL ENGINEER* will be coming out on second Friday of December. This will be the EXHIBITION SOUVENIR HANDBOOK & GUIDE. It will contain exhibition entries, details of trade stands PLUS, PLUS articles by experts on all aspects of modelling—fold out Avro 504 plan, ships' guns drawings, Evans on passenger hauling locomotives, articles on model petrol and other aero engines, classification of boat racing classes, whys and wherefores of r/c systems, the hobby now and in the future, model railway operation . . . in fact lots for everyone. Guide will be 76-page size, price 2/6d. on sale everywhere and at the show. If you cannot come get a copy and it should persuade you . . . if you expect to come read all about it first.

PARTIES or ALONE

Many clubs will be organising parties to come from quite distant places . long trips are now feasible thanks to the growing motorway net-works. We shall be delighted to make reduced price group bookings for such parties, which will not only make it cheaper but also ensure a straight-in, no queuing entry. There is adequate catering on the spot, so we can also book up party lunches, teas, suppers for fixed times with agreed menus. Entry 3/- per person. Single and small number pre-booking tickets will be available from these offices at 2/6d. each, party bookings of ten or more at 2/- per person.

WORKBENCH

Welcome to All

THE EDITOR and his staff would like to welcome readers to the new *Meccano Magazine* produced by Model Aeronautical Press.

Through an agreement between Meccano Ltd. and Model Aeronautical Press, the new *Meccano Magazine* is to be published monthly at the recommended maximum price of 2s. 6d. per copy. In recent years, after some 51 years of continuity, the *Meccano Magazine* has changed considerably in editorial content and format and we feel sure that *Meccano Magazine* is now here to stay, with a progressive editorial content and stabilised format.

An Association

The following is an announcement from H. J. Fallman, Esq., Managing Director of Meccano Ltd.:

"The Meccano Constructional System is more than half a century old, and yet it is as young today as it was when first introduced.

"Throughout its long and uniquely successful history it has been perpetuated and supported by the *Meccano Magazine* which, in turn, has been held in the highest esteem by succeeding generations of readers, as much for its informative engineering and creative features, as for its Meccano Model-Building pages.

"It is, therefore, with very great pleasure that I now link the name of Meccano with that of Model Aeronautical Press. This association of the two unrivalled leaders in their own very specialised fields ensure, with your support, a prosperous future for the new *Meccano Magazine*."

Christening Cake

The Warwickshire District Meccano Constructors' Guild (Midland Meccano Guild) held its inaugural meeting at Stratford-on-Avon on Saturday, October 28th. This was a great success, with twenty senior Meccano constructors from the Midlands present. The programme of model demonstrations, exhibitions of old *Meccano Magazines*, and a 16mm. cine film of models in action went with a swing.

Above: the Meccano Magazine Christening cake, baked and decorated by Mrs. B. N. Love, a really great effort! Below, members of the now named Midland Meccano Guild with Mrs. Love cutting the cake; that's Mr. Love on her right.

Highlight of the afternoon was the ceremonial cutting of the *Meccano Magazine* Cake baked and decorated by Mrs. B. N. Love welcoming the news of the magazine's return. The circular strips and architrave corners are genuine red and green Meccano parts to match the red and green decorations and red ribbon.

Any Meccano constructors wishing to join the Guild should sent a stamped addressed foolscap envelope to Mr. B. N. Love, Hon. Sec., Midlands Meccano Guild, 61 Southam Road, Hall Green, Birmingham, 28.

The Editorial Staff

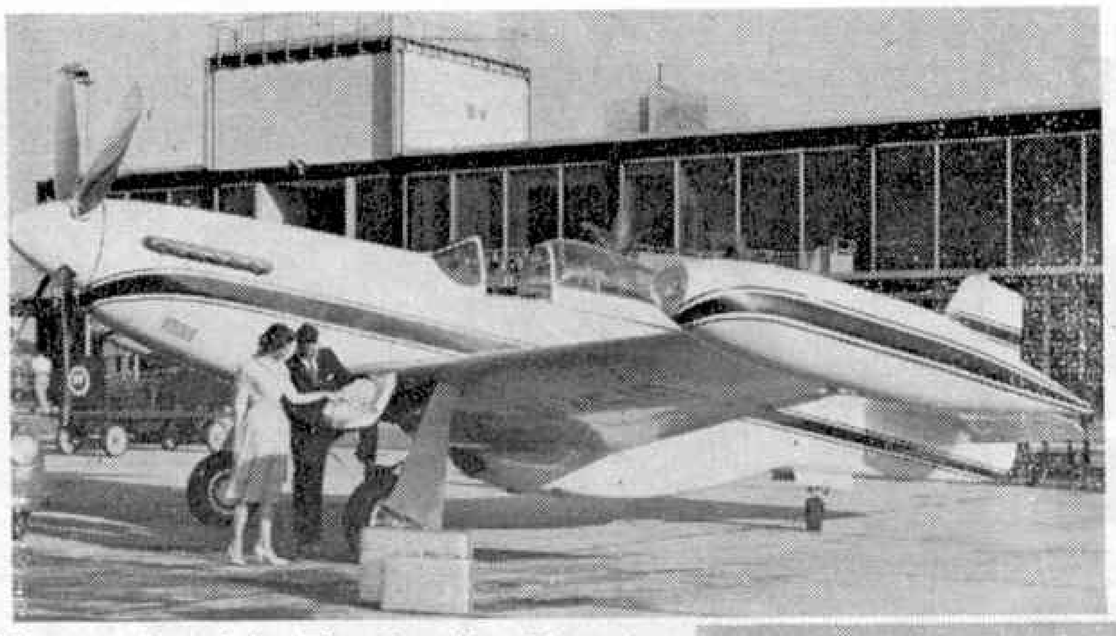
John Franklin, aged 24, residing in Hemel Hempstead, is the Editor. John was previously Assistant Editor of *Aeromodeller*. His hobby interests are diverse with 15 years experience, and he has been responsible for organising a model club, contests and modelling functions on both local and national levels. Model aircraft are his pet subject, with simple balsa models and plastics for relaxation and sport modelling.

John Brewer, aged 23, who worked on the previous *Meccano Magazine*, is Assistant Editor. John's model railway experience is extensive, with prototype railways his pet subject. He is also keen on between-the-wars cars, owning a Morris 10, and is the London District Secretary of the "Thirty-Forty Motor Club."

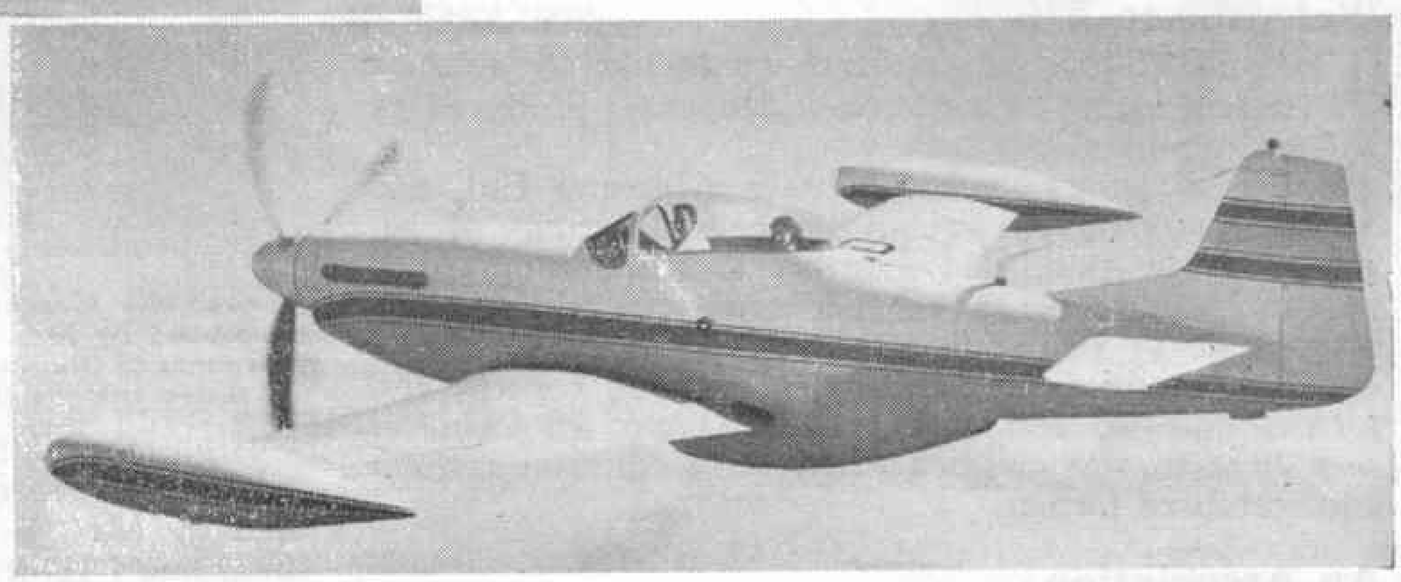
Doug McHard, the Editor of the previous *Meccano Magazine*, and now Marketing Manager of Meccano Ltd., is consulting Editor for the Meccano model pages and Dinky Toy News. We hope Doug will be able to continue with some of his excellent plastic kit conversion features later in the year.

AIR NEWS

by John W. R. Taylor



Above and at right: The Cavalier Aircraft Corporation's Executive Mustang "2000," a really plush, two seat, transport version of the W.W.2 combat aircraft.



Below: The New U.S.A.F. Cavalier Mustang, serial number 67-14865 photographed at Sarasota, Florida, U.S.A. The pilot is D. B. Lindsay, Jnr., President of Cavalier, note the 14 in. taller fin.

Old favourite back in production

JUST AS I was searching for a suitable subject for the first Air News item for the new *Meccano Magazine*, I received a packet of facts, figures and photographs from America bearing the above highly-appropriate headline. My correspondent knew nothing about *M.M.* going back into production and the old favourite to which he referred is, in fact, the famous F-51D Mustang fighter of World War Two.

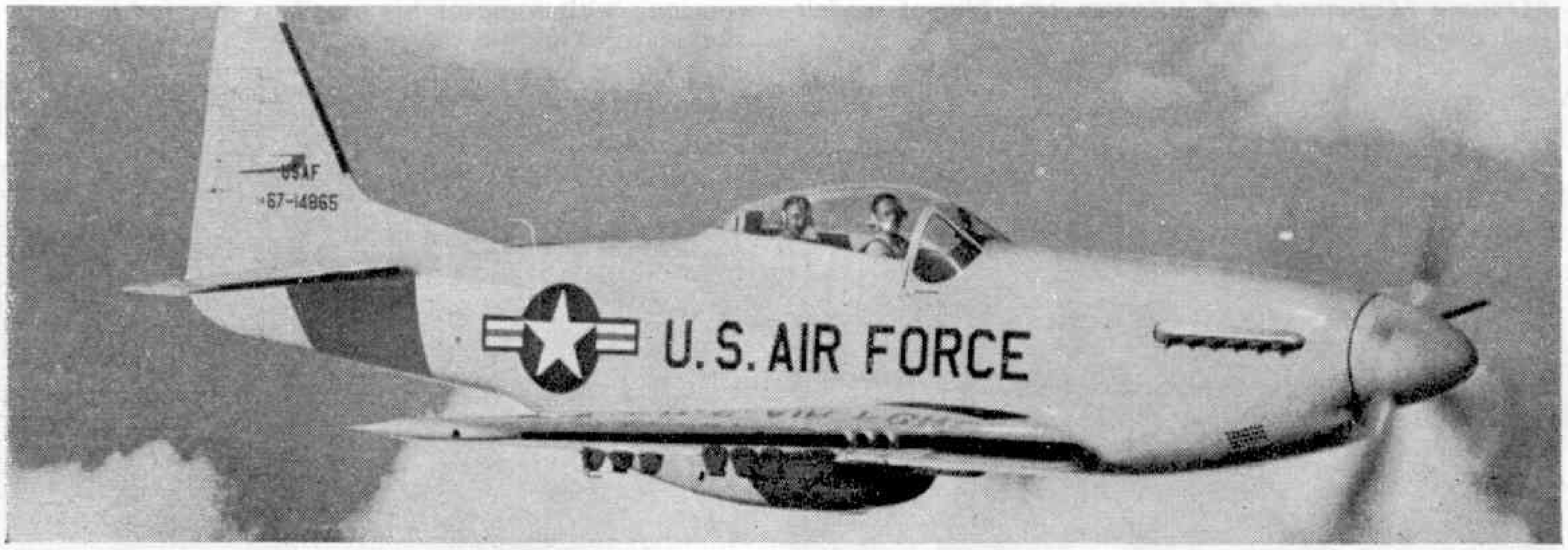
For years the U.S. aircraft industry has been trying to design and build a low-cost combat 'plane able to perform ground attack and reconnaissance duties in support of land forces in the kind of war being fought in Vietnam. Modern supersonic jets have their limitations in this "counter-insurgency" (COIN) role. Their speed and high fuel consumption often give them insufficient time to seek out and make a highly-accurate attack on enemy troops or guerrillas in mountains or heavily-wooded terrain, and this leads occasionally to disastrous attacks being made on their own army units and friendly villages. Such aircraft also need big airfields from which to operate and are costly to fly and maintain.

Surplus trainers like the North American T-28 have been modified quite successfully for COIN duties, as have veterans like the Douglas Skyraider and even the Dakota. Attempts to develop new combat types specially designed for the job have been less rewarding, although the twin-turboprop North American OV-10A Bronco may set a new fashion.

Army commanders old enough to have served in World War Two could not help wishing sometimes for a few hundred of the Typhoons, Thunderbolts and Mustangs which gave such superb close support to Allied armies during the invasion of France in 1944. Then somebody realised that the wish could be fulfilled, at least in part.

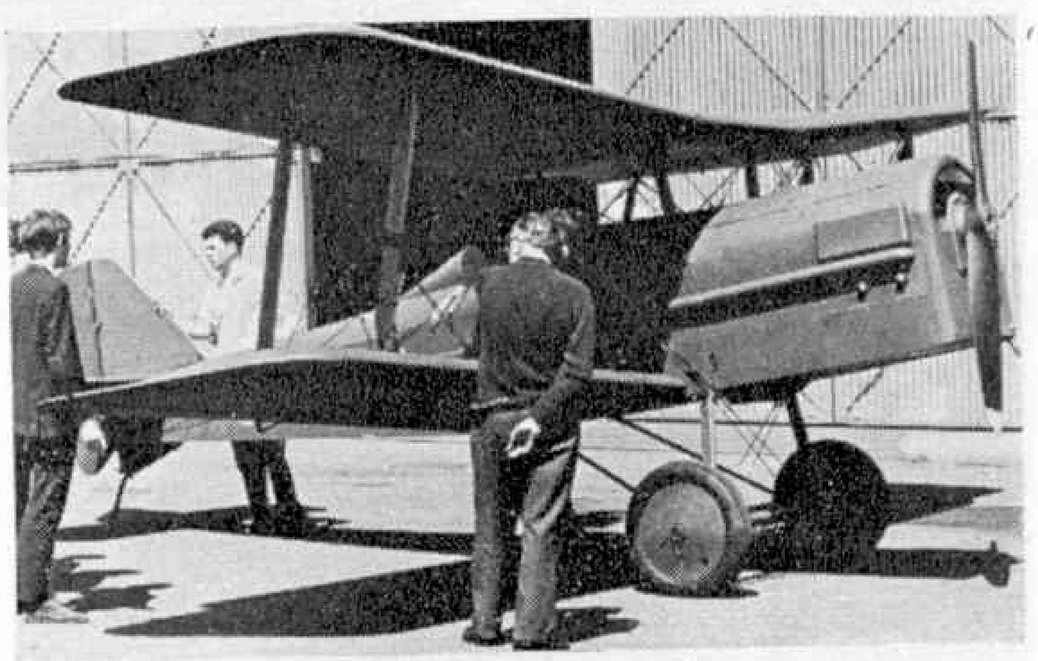
It seems that, in America, there are still large stocks of Mustang components and spares produced during the war for the U.S.A.A.F. and its allies. A company named Cavalier Aircraft Corporation, at Sarasota, Florida, has been drawing on them for years, enabling it to turn out a plush tandem two-seat executive transport version of the Mustang which is one of the hottest, most exciting small business 'planes in the sky.

When the President of Cavalier Aircraft, David Lindsay, was in the U.K. recently, he telephoned to



At left: The record breaking U.S.S.R. E.166 displayed at Domodedovo Airport, Moscow.

Below: The 1967 S.E.5a, only 83% of the original's size and produced by Slingsby Sailplanes for film work. Top speed is 120 m.p.h.



tell me about his new programme to build 1967-type F-51D Mustang fighters for the U.S. Government. They are being delivered in two forms, with all necessary new components and equipment manufactured by Cavalier or bought from outside contractors.

The U.S.A.F. version looks just like the wartime F-51D, except for the two-seat canopy and a taller fin and rudder. Internally, however, it is very different, with completely redesigned fuel and electrical systems, new heating and ventilation systems, and Bendix up-to-the-minute VHF, VOR and ADF electronics. Structural changes include reinforced wing spars to cater for the heavy armament loads to be carried on COIN missions.

In addition to the usual six 0.50-in. machine-guns in the wings, the Cavalier F-51D has six underwing racks each able to carry up to 750 lb. of bombs, rockets, napalm tanks and other weapons.

At the moment, Cavalier is not allowed to reveal the specific use, quantity, price and destination of these powerfully-armed fighters. Such secrecy does not apply to the version being built for the U.S. Army, which will use F-51D's as unarmed photographic and chase aircraft in their development programme for high-speed helicopters. The Army machines have large wingtip tanks and Brittain B4A autopilots. Both the U.S.A.F. and Army versions have updated Rolls-Royce Merlin engines, the crackle of which will bring back many memories to older spotters.

Wot a lot of S.E.5a's

The box-office success of films like *Those Magnificent Men* and *The Blue Max* seems to be inspiring a crop of films about the early days of flying, and all we can hope is that the quality and accuracy will remain as high as in these first two movies.

A happy result of all this is the growing demand for replicas of vintage aircraft—and not only aeroplanes, as those spotters will know who have caught glimpses of a Lebaudy airship back in the air after more than half a century.

Up at Kirbymoorside in Yorkshire, Slingsby Sailplanes Ltd has been turning out S.E.5a fighters of 1918 vintage. At least, they look very like S.E.5a's from a distance but are, in fact, based on the airframe of the well-known Currie Wot amateur-built lightplane and are only 83% the size of the original fighters. Six flying replicas have been delivered, with 115 or 150 h.p. Lycoming engines, and the first of these flew on June 20th of this year. Slingsby have also built three non-flying mock-ups and three similar non-flying Fokker D.VII's.

With a span of 22 ft. 1 in. and loaded weight of 1,200 lb., the Wot/S.E.5a's have a top speed of 120 m.p.h.

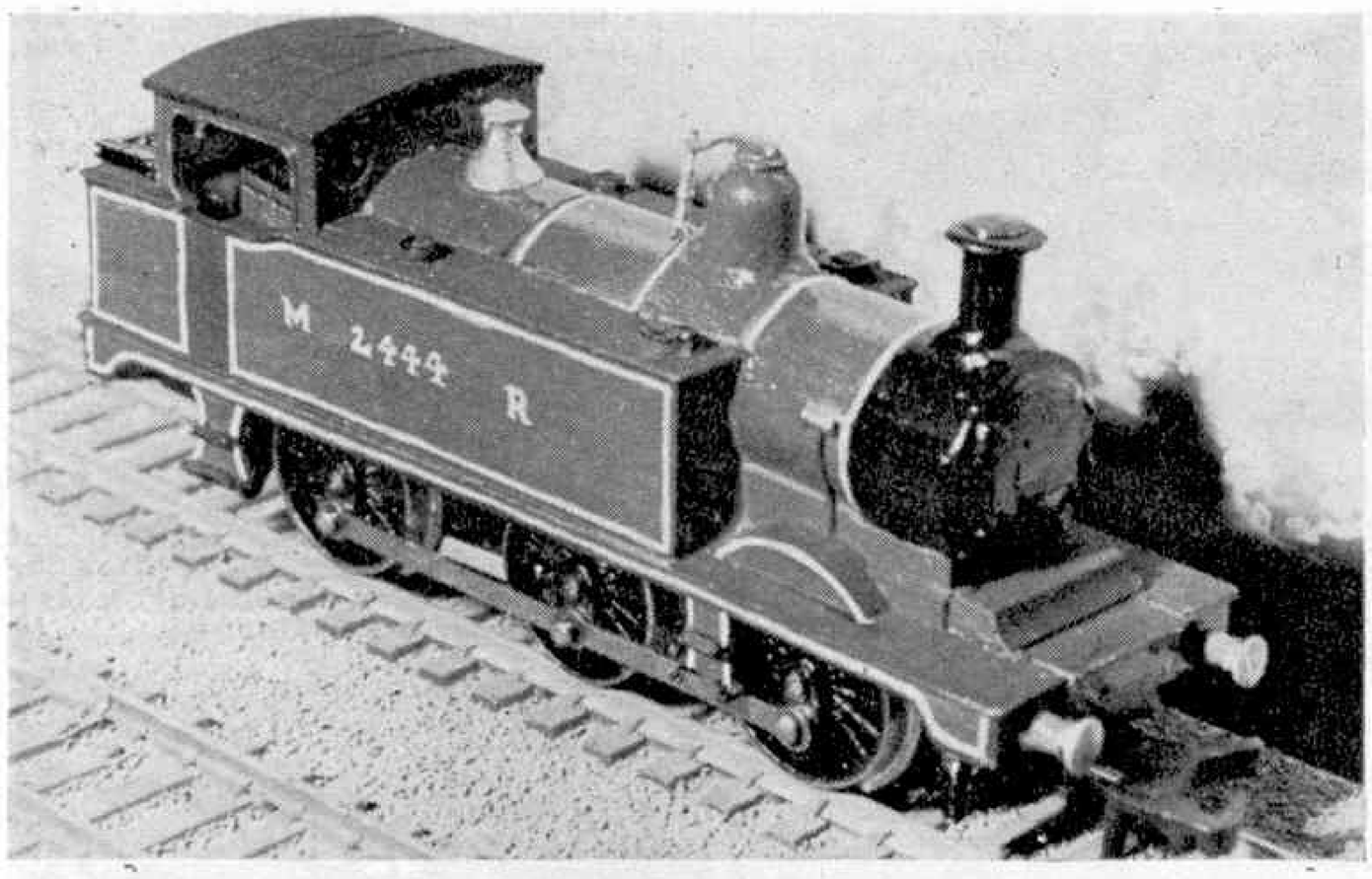
Russian record-breaker revealed

One of the most challenging tasks facing aviation people in the West is to guess the identity of aircraft used by the Russians to set up international records. For example, when Alexander Fedotov achieved 1,491.9 m.p.h. over a 100-km closed circuit on October 7th, 1961, all that was revealed about his aircraft was that it was an all-metal delta-wing monoplane powered by a TRD Mk. P.166 turbojet of 22,050 lb. thrust.

The Russians called it the E-166 and this gave us a first clue, as the E-66 had been a version of the MiG-21 fighter. The similarity of the two designations made it likely that the E-166 also was a Mikoyan design. It set up two more records in 1962, including a speed of 1,665.93 m.p.h. that was unbeaten until the Lockheed YF-12A pushed the record beyond 2,000 m.p.h. for the first time in 1965.

We now know that our guess was correct, as the E-166 was displayed at Domodedovo Airport, Moscow, during the big Soviet air show to celebrate the 50th anniversary of the Revolution, in July. It is, as expected, very like the MiG-21 in general layout but considerably larger, with a span of around 30 ft. and length of about 65 ft. The tiny moulded cockpit canopy and absence of weapon racks and other operational equipment imply that it was built solely as a research aircraft, probably to flight test the big turbojet.

This leaves us with the identity of the E-266 still unsolved. An aircraft with this designation set up a speed record of 1,441.5 m.p.h. around a 1,000-km. closed circuit in April 1965, carrying a two-ton payload. As it had two engines, my guess is that it was the experimental fighter that was once given the code-name "Flipper" by NATO, and which looked very like a twin-jet E-166. How nice it would be to get a letter from Mr Mikoyan confirming this and giving the *M.M.* a "scoop" by enclosing a picture of it!



WHITE METAL

Locomotive Construction

The K's "Bodyline" Midland 3F 0-6-0 tank locomotive

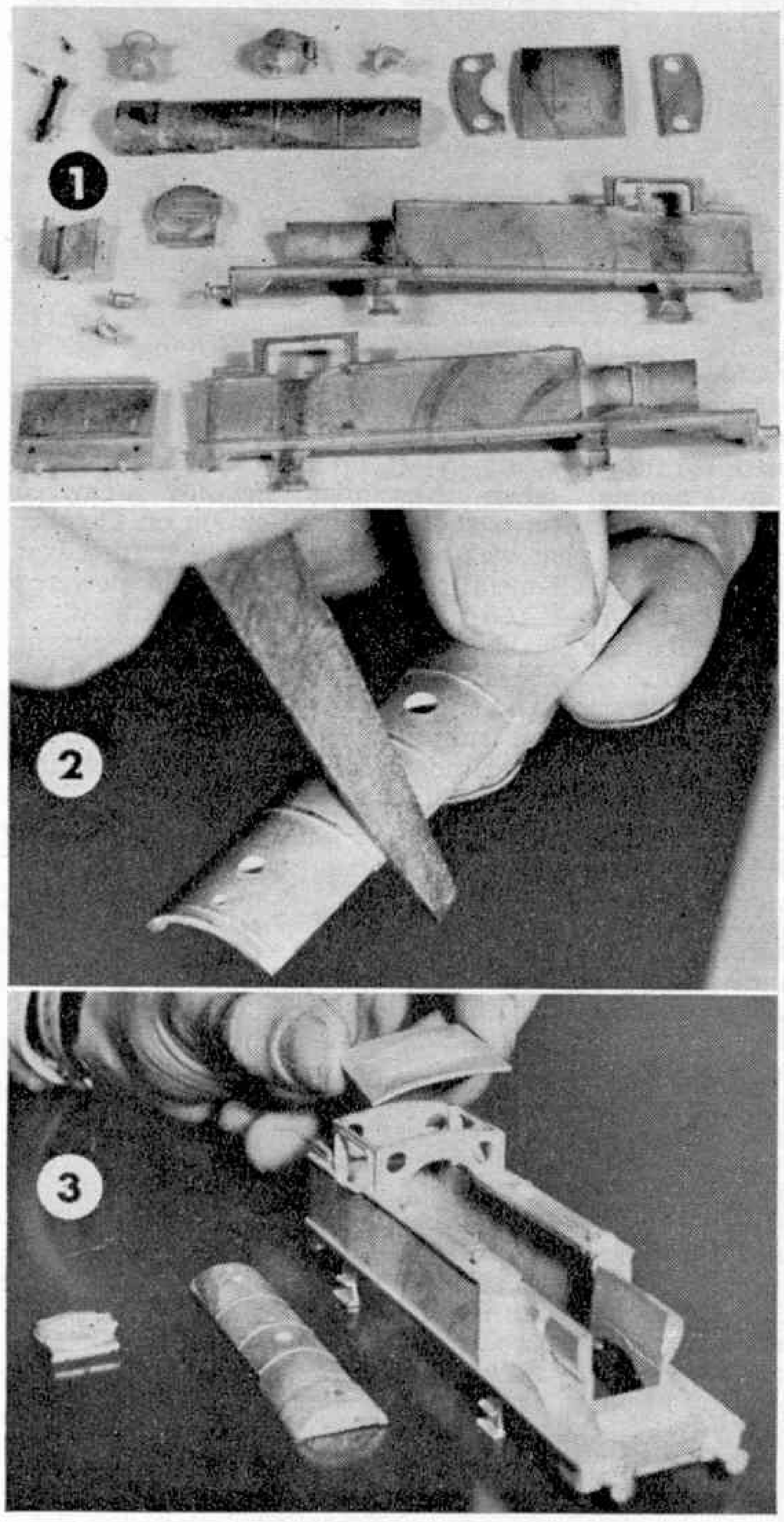
IN THESE days of injection moulding and mass-production techniques, the model railway enthusiast has available to him a really large range of good models which can be purchased "off the shelf." Proprietary model locomotives and rolling stock are infinitely better detailed, more accurate in outline and closer to scale than they were even a few years ago, and all tastes are well catered for, from veteran steamers resplendent in their old company liveries to the latest BR diesel and electric locomotives. Anyone would think, therefore, that all enthusiasts would be satisfied with their lot, but no ! However excellent an "off the shelf" model may be, it will always be exactly the same as thousands of others, running on other people's layouts, and so the individualist looks for something a bit "different." The answer to the problem is very simple, of course, if you are one of those lucky people who is able to transform a few scraps of brass into a scale model, but for lesser mortals the best way of obtaining a model of character is to use a white-metal kit.

Great variety

More than 50 different locomotives are available in white-metal kit form, from three separate manufacturers, K's, Wills and Gem. Basically, the kits fall into two categories; in the first, the kits contain *all* the parts necessary to construct the complete model, including motor, wheels and sometimes even paint. The second category kits are designed to be used in conjunction with proprietary chassis, usually Tri-ang or Hornby, and therefore contain parts for the body of the locomotive only.

Lay it out

We constructed the K's "Bodyline" Midland Railway class 3F 0-6-0 Tank, the prototype of which was designed by the Midland's locomotive superintendent S. W. Johnson, and built in vast numbers. Midland Railway engines were always noted for their good



The heading picture shows our completed "3F," finished in crimson and lined out and lettered in black and yellow. 1: the various parts of the kit laid out on the bench prior to assembly. As can be seen, both sides of the locomotive are cast entirely in one piece. 2: using a file to remove flash from the boiler-top. 3: giving the cab roof a "dry run" to check the fit prior to gluing in place.

looks, and in this model, Messrs. K's have really captured the pretty, perky appearance of the original. Photograph 1 shows the white-metal parts of the kit "laid out" on the workbench, prior to construction. It is always a good idea to lay out the parts of a kit before starting work, to become thoroughly familiar with the function of each individual part, however small. As the photograph shows, our "3F" is built up from surprisingly few parts. Both sides of the locomotive including the footplate valance, footsteps, cab sides and lower part of the boiler, are cast in one piece, and together form the largest part of the model. The remaining parts are the rear plate of the bunker, boiler top, smokebox door, cab front, back and roof, chimney, dome, safety valve "bonnet" and buffers. The 8BA screw and nut serve to attach the completed body to the chassis.

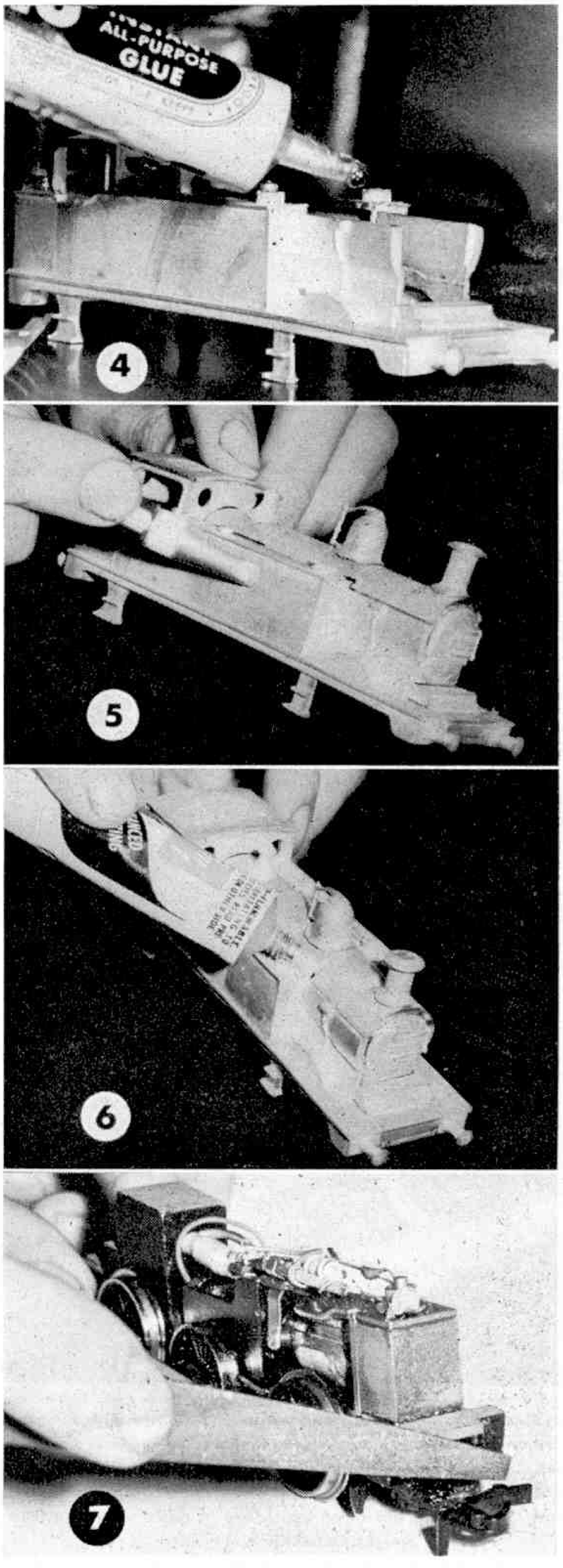
Assembly

Some "flash" or surplus metal on the parts is inevitable, and it is essential to clean off all flash with a file or sharp knife before assembly is even contemplated, photograph 2. Don't neglect this operation in your eagerness to start building—it will really pay off later! Having cleaned up the parts, give them all a "dry run," that is, fit them together without adhesive to make sure that they *do* fit. The well-known impact adhesives like Bostik, Evo-stik and Uhu are all suitable for joining the metal parts—we used Uhu as it dries "clear." Photograph 4 shows the body in half-completed state, awaiting boiler top and smokebox door. Photograph 3 shows the cab roof being given a "dry run" and the boiler top and smokebox door awaiting installation.

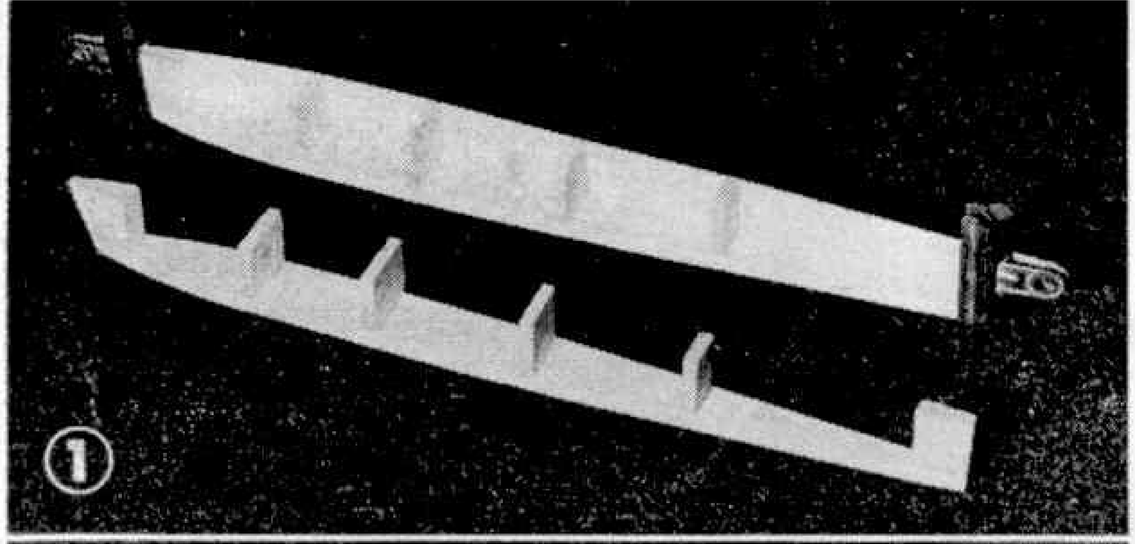
Cleaning and painting

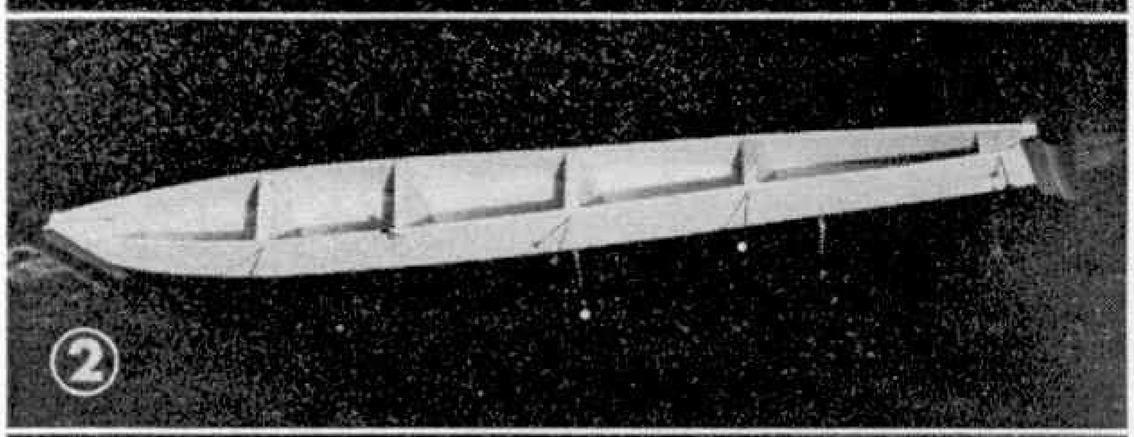
As assembly progresses, the metal parts are bound to become rather grubby, and photograph 5 shows our model being cleaned up with the aid of a fibreglass tipped burnisher, a useful little tool available from K's themselves. You will notice that there are some cracks in evidence between some of the parts which must be carefully filled before painting. We used AMT body putty for this job, photograph 6. Let it dry hard, and sand to final shape. When all the cracks have been filled, and the body cleaned to your satisfaction, a coat or two of pink primer can be applied—Joy primer covers very well, but any non-cellulose paint will do. Before the Midland Railway became part of the L.M.S. in 1923, it's engines were painted in a beautiful crimson red livery. We used Humbrol Crimson, which is just about the right shade. The whole engine should be crimson, except for the following: cab roof, tank tops and coal rails, matt black. Smokebox, footplate top and chimney, gloss black. Safety valve casing, "copper." The tank sides and boiler bands should be lined out in black and yellow.

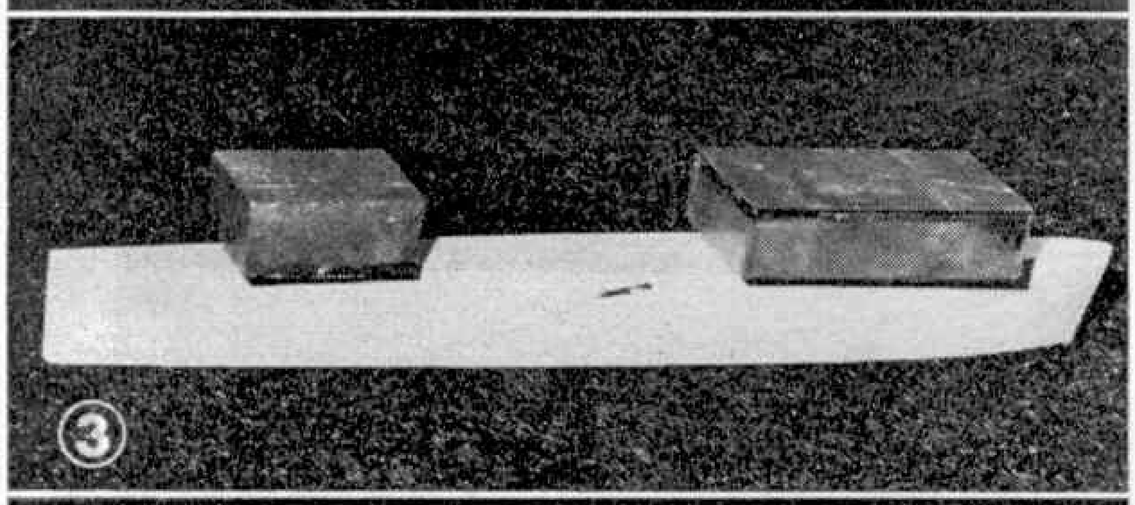
All that now remains to be done is to fit the chassis, which bolts in very simply. The chassis locating tongue at the rear will need filing shorter to fit the new body, photograph 7.

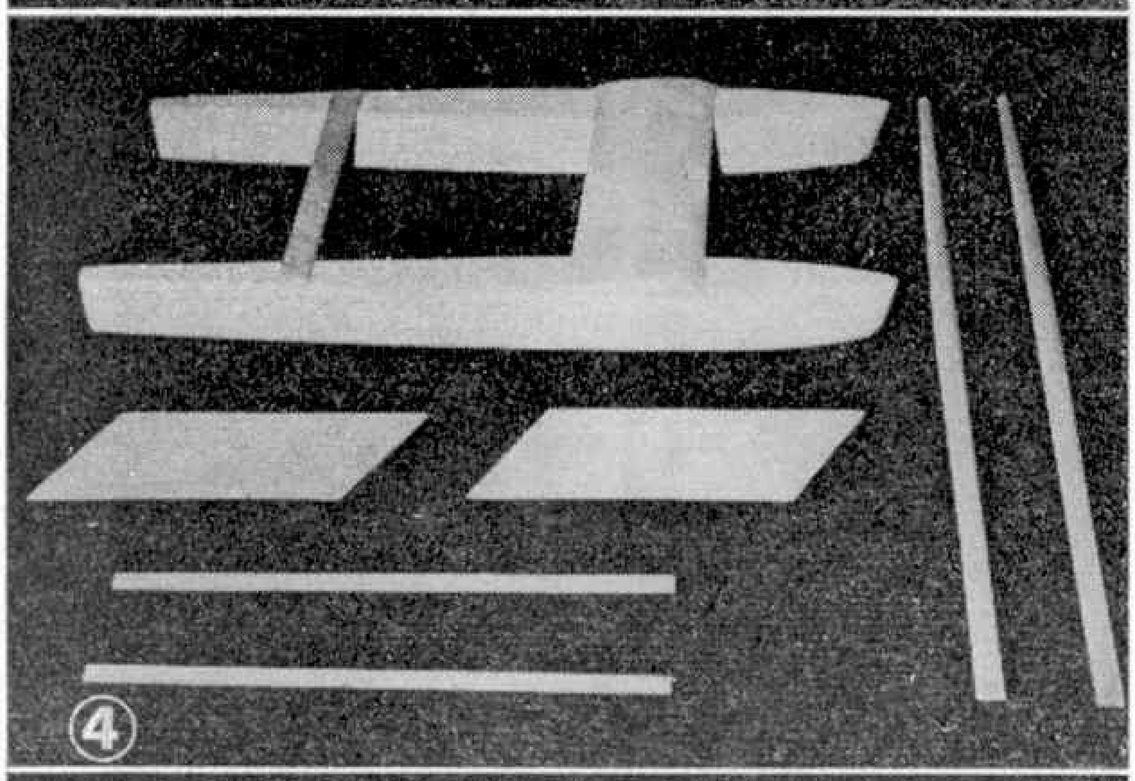


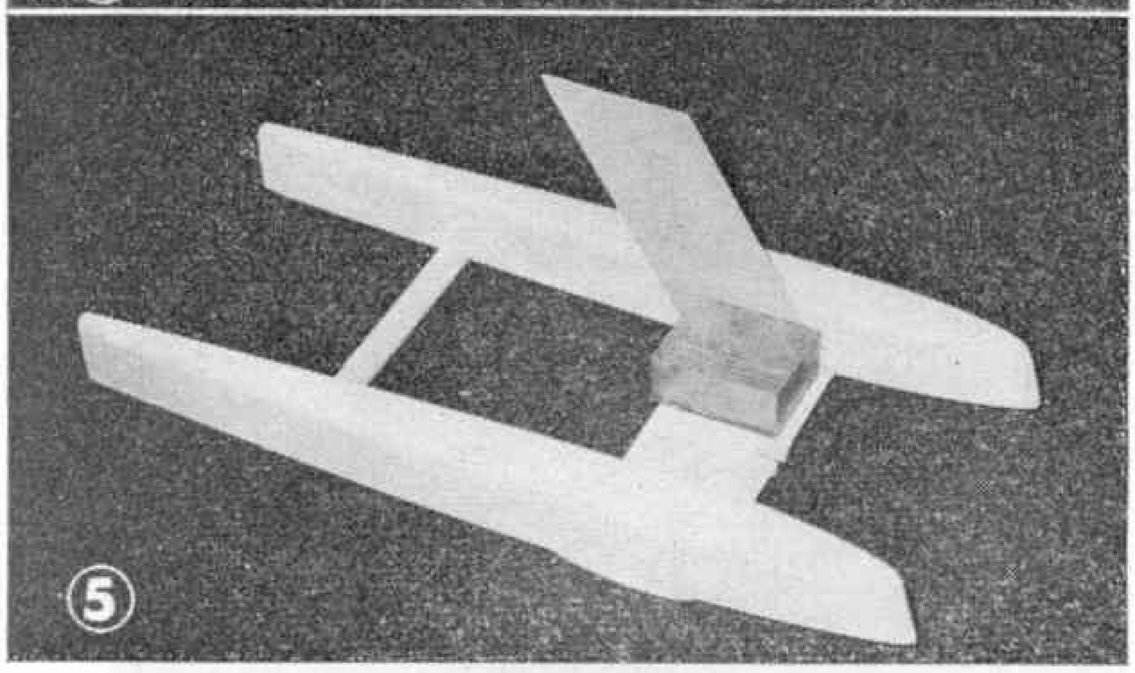
4: the locomotive body in half completed state. The Uhu adhesive is being applied along the top of the side-tanks, ready for installation of the boiler top. 5: white metal castings get rather grubby when handled; this picture shows the K's fibre-glass-tipped burnisher being used for "cleaning up." 6: filling gaps with A.M.T. body putty, which dries hard and can be filed and sanded to shape. 7: filing down the body locating lug on the Hornby chassis.











Stage by stage construction photos show: 1. The bottom with formers cemented on and one side skin clamped in place. 2. The final side skin held with clamps and modelling pins. 3. The top decking being weighted down until the cement dries. 4. All of Baby Cat's component parts. 5. One of the plywood fins being cemented in position with a lead weight to hold it true.

Peter Gillhespey, a young Hemel Hempstead modeller, with the ¼ prototype "Baby Cat," illustrates the model's size.

BABY CAT

An easy to construct 13" long Catamaran model, an ideal "first" balsa boat

FULL SIZE PLANS AVAILABLE

CATAMARANS HAVE gained tremendous popularity for their stability and fast sailing qualities, which applies equally well to models as to full size craft. Another great attraction of a catamaran model is that it can be made easy to build, and our *Baby Cat* can be completed in no more than a couple of evenings' work. The cost is another attraction. Three or four shillings should cover all the materials required.

The plan is reproduced exactly half full size. You will need to make new drawings of the deck and bottom patterns full size, also the bulkheads and fin (and the sail shape)—or, if you prefer, you can obtain a full size plan **(price 2/6 post free from Meccano Magazine Plans Service, 13-35 Bridge St., Hemel Hempstead, Herts.)**. For those with dividers the ½ in. grid lines will make enlargement easy.

Construction

The two hulls are identical and are very simple to make. Start by cutting two bottom panels to shape from ¼ in. sheet balsa; and the eight bulkheads from 3/16 in. sheet balsa (four off B1, and two off each of B2 and B3).

Mark the bulkhead positions on the bottom panels (measuring off the plan) and cement the bulkheads in place on the bottom. Now shape the bow blocks from 1 in. × 1 in. × ½ in. balsa, first cutting to the side

(Continued on page 16)

Baby Cat

A 13" LONG CATAMARAN OF SIMPLE CONSTRUCTION. COPYRIGHT OF MECCANO MAGAZINE PLANS SERVICE, 13-35, BRIDGE STREET, HEMEL HEMPSTEAD, HERTS.

1/2" SQUARES

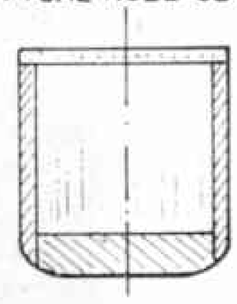
BULKHEADS CUT FROM 3/16" SHEET BALSA

B1 4 OFF

B2 2 OFF

B3 2 OFF

TYPICAL HULL SECTION



TAPER MAST TOWARDS TOP

PATTERN FOR GLAZED TERYLENE SAILS

PATTERN FOR POLYTHENE SHEET SAIL

JOIN

SAIL BATTENS

DECK PATTERN CUT TWO FROM 1/16" SHEET

BOTTOM PATTERN CUT TWO FROM 1/4" SHEET

CENTRE SECTION 6" X 2" X 1/4"

CEMENT FIN TO SIDE

ROUND OFF EDGES BUT LEAVE CENTRE SQUARE

CEMENT MAST INTO SLOT IN CENTRE SECTION

3/8" X 3/32" SLOT FOR MAST

FIN 1/16" PLY CUT 2

SANDWICH EDGE OF SAIL IN MAST WHEN CEMENTING UP

6" X 3/8" X 3/32" SPRUCE SPREADER

MAST IS TWO 14 1/2" X 3/8" X 3/32" SPRUCE STRIPS CEMENTED TOGETHER

CEMENT FIN TO SIDE

B1 B1 B2 B3

DECK PANEL OMITTED FOR CLARITY

BOW BLOCK 1" X 1" X 1/2"

STERN BLOCK 1" X 1" X 1/2"

1/8" 1/8"

SCREWEYES

SANDWICH EDGE OF SAIL IN BOOM WHEN CEMENTING UP

BOOM IS TWO 8" X 1/4" X 1/16" SPRUCE STRIPS CEMENTED TOGETHER

SCREWEYE

BOWSIE

THREAD

SCREWEYE

1/4"

DECK

CENTRE SECTION

SPREADER

SIDE B1 B1 B2 B3

BOTTOM

FIN

MATERIALS LIST

1 sheet 36" x 3" x 1/16" balsa
1 half sheet 18" x 2" x 1/4" balsa
3/16" sheet balsa, size approx. 6" x 2"
1/16" ply, size 6" x 2"
1 length 36" x 3/8" x 3/32" spruce
1 length 16" x 1/4" x 1/16" spruce
2 pieces of balsa block 1" x 1" x 1/2"
Sail material 13.1/2" x 8.1/2"
2 ft. length of thread (rigging cord)
4 small brass screweyes
1 bowsie
Balsa cement ... pins ... sandpaper

PARTS LIST

DECK - cut two from 1/16" sheet balsa to pattern
BOTTOM - cut two from 1/4" sheet balsa to pattern
SIDES - cut four pieces 13.1/2" x 1.1/2" from 1/16" sheet
CENTRE SECTION - 6" x 2" x 1/4" sheet balsa
BOW BLOCK - 1" x 1" x 1/2" block balsa, two required
STERN BLOCK - 1" x 1" x 1/2" block balsa, two required
MAST - two 14" lengths of 3/8" x 3/32" spruce strip
BOOM - two 8" lengths of 1/4" x 1/16" spruce strip
BULKHEADS B1, B2 and B3 - cut from 3/16" sheet balsa
FIN - 6" x 2" x 1/16" ply, cut two
SPREADER - 6" length of 3/8" x 3/32" spruce strip
SAILS - cut to pattern from polythene or glazed terylene

shape, as shown, and then tapering to a triangular shape. The stern blocks are tapered off as shown on the plan. Check both bow and stern blocks for fit over the bottom, then cement in place.

Now cut four pieces of $\frac{1}{16}$ in. sheet balsa $1\frac{1}{2}$ in. wide by $13\frac{1}{2}$ in. long for the sides. Apply cement generously to both the edges of the bottom hull, and the edges of the bulkheads. Position the two sides, bending to the necessary curve and hold in place with pins. You will find it easiest to do this if you rest the bottom on a flat surface. Fit up both sides together and, if necessary, squeeze the front end in tight to the bow block with a Bulldog paper clip. Add the sides to the other hull in a similar manner and leave both to set for an hour or so (you can add the sides separately if you like).

Meanwhile you can cut out the two deck panels, the centre section and the two fins. The centre section is notched at the centre on the leading edge to take the mast. Then round off the edges to give a streamlined appearance, leaving the area around the notch square for additional mast support.

Now back to the two hulls. Make sure that the sides are flush with the tops of the bulkheads, bow and stern blocks and then cement the deck panel in place on each hull, again holding with pins until set. Each hull is then completed by trimming off any surplus length of sides at the bow and stern and rounding off the edges of the bottom slightly with sandpaper to produce a hull section similar to that shown on the plan.

Next stage is to join the two hulls using the centre section and spreader. Mark a line 3 in. back from the bow on each deck. This is where the front of the centre section should come. Cement the centre section to each deck and pin in place to hold until set. Check by laying over the full size plan (or by measurement) that the two hulls are parallel. Then cut a 6 in. length of $\frac{3}{8}$ in. $\times$ $\frac{3}{32}$ in. spruce for the spreader and cement this in place also. This is positioned over bulkhead B3 position in each hull, but since you cannot see the bulkheads at this stage, measure $3\frac{3}{8}$ in. forward from the stern of the hull as a mark for locating the rear edge of the spreader on each hull. Finally cement the two fins in position to the inside of each hull and up against the underside of the centre section.

That completes the hull assembly but for waterproofing (and painting, if you wish). Three or four coats of clear dope, sanded down lightly between each coat, will give a waterproof finish. You can then add a coat of colour if you wish.

Now for the mast and sail assembly. Thin polythene sheet is an excellent and quite inexpensive sail material —e.g. cut from a large polythene bag, but glazed terylene or a similar semi-stiff and waterproof material is better, if you can obtain it. If you are using polythene, the sail is cut to a triangular shape. If you are using glazed terylene you can make a "fuller" sail which can be stiffened by cementing three sail battens in place as shown on the plan. These battens can be cut from scrap balsa—e.g. $\frac{1}{8}$ in. $\times$ $\frac{1}{16}$ in. strip, each batten being 3 in. long.

Cut the sail to shape from the material you have chosen. Then cut two 14 in. lengths of $\frac{3}{8}$ in. $\times$ $\frac{3}{32}$ in. spruce for the mast; and two 8 in. lengths of $\frac{1}{4}$ in. $\times$ $\frac{1}{16}$ in. spruce for the boom.

The two mast pieces are then cemented together, trapping the edge of the sail between them. Similarly, the two boom pieces are cemented together trapping the bottom or foot of the sail between them. Now leave until the cement has properly set.

Rigging

You now need to make a proper pivot or "goose-neck" for joining the boom to the mast. This is two screweyes, interlocked as shown on the plan. To do this, simply open up one screweye and pass through the eye of the other, then close up again with pliers. Pierce holes in the mast and end of the boom to *push* the screweyes in place after coating the threads generously with cement. Do not try to *screw* the screweyes in place.

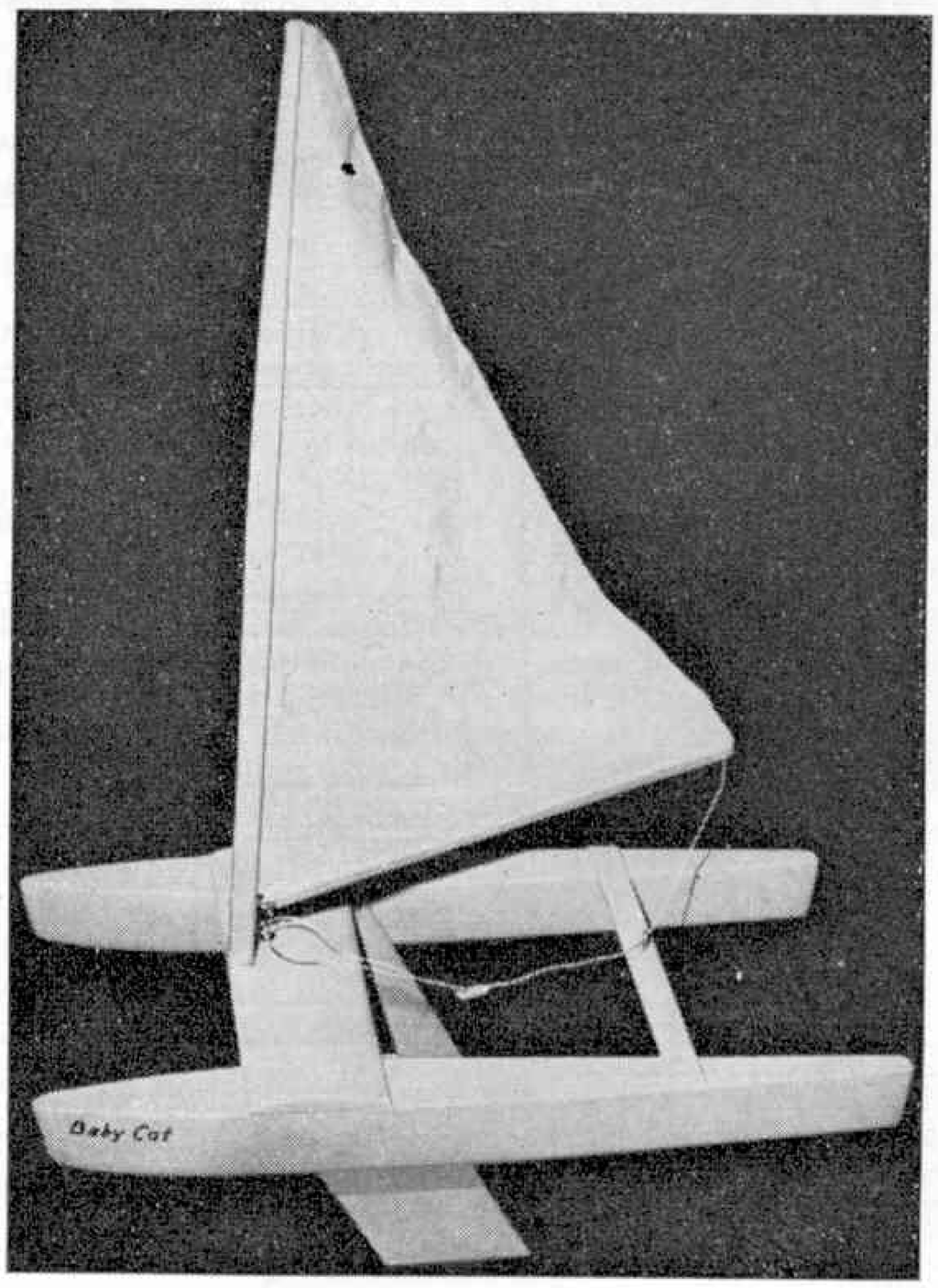
The bottom of the mast cements into the slot in the front of the leading edge, giving a slight amount of backward tilt or rake to the mast. To improve the appearance you may like to taper off the mast towards the top. This can be done with a small modelling plane, or even a modelling knife—but do this before cementing the mast to the centre section.

The rigging is completed by fitting one screweye into the mast about $\frac{1}{2}$ in. below the boom position, and another in the centre of the spreader, with thin card or thread connection as shown to the end of the boom. The bowsie allows you to adjust the setting of the boom to sail the course you require.

Sailing—Baby Cat

All you need now is a stretch of fairly open water and a light breeze to try out your Baby Cat. You should find that it will sail straight on a heading determined by the setting of the boom. If it persistently turns to one side, check if the fins are straight. They will act as rudders if out of line. If you still have trouble in getting the model to sail straight, then you can try fitting an additional rudder to one hull (or both hulls) at the extreme stern. A piece of thin brass sheet cut to shape and pushed into a slot cut in the stern block will do.

For windy weather sailing, weights attached to the bottom of each fin will give greater stability.



Modelling on Stamps

by James A. Mackay

The first in a regular monthly series of stamps on a theme

★ ★ ★ ★ ★ ★ ★

CONSIDERING ALL the many stamps which depict sports and pastimes, comparatively few are devoted to model-making. The earliest stamp showing this subject was the 10 kopeck stamp in Russia's Child Welfare series of 1929 which featured boys making models in a classroom. Not surprisingly, Russia has issued plenty of stamps with this theme since then and, as model-making seems to be one of the chief activities of the Young Pioneers, the stamps of other Communist countries have also had their share of modelling stamps. The 80k. in Russia's series of 1938 dedicated to Soviet Union Children showed young inventors engaged on various projects, while a stamp in the Industrial Training Scheme set of 1959 depicted schoolboys in a workshop. Many Russian sets publicising aviation developments before World War II included a stamp showing Young Pioneers flying model aeroplanes and gliders. The Pioneers' Day stamp of 1958 showed a Pioneer holding a model plane, while the set, issued in 1962 to mark the 40th anniversary of the Pioneer movement, brought the idea up to date and showed Pioneers building model sputniks.

Hungary has issued some attractive stamps with modelling as their theme. Perhaps the best of these is the large diamond shaped stamp of 1954 showing a boy building the fuselage of a model glider. Another stamp in the same set showed a boy launching a model plane. The top value in the 1950 Children's Day set showed Pioneer boys and girls attending a model glider class. Other Communist countries have placed emphasis on the making of model gliders and planes as well. Model aircraft construction was the subject of East Germany's 25pf. stamp of 1961 honouring the Young Pioneer Meeting at Erfurt, and Communist China's Aviation series of 1958 showed children with model aircraft on the 4 yen stamp. Aeromodelling was also the subject of the 5s. stamp in Bulgaria's Young Pioneer set of 1965 and Roumania's 55l. stamp of 1953.

Apart from two stamps from Syria in 1955, which showed a boy and girl making a model glider, most of the modelling stamps from the non-Communist countries seem to be concerned with other aspects of the hobby. Japan issued a stamp in 1956 to mark International Children's Day and showed children with paper carps. The modelling of birds, animals and fish in paper in an ancient art in the Orient. Toy-making was also the subject of the 40c. stamp released by the Netherlands in the Child Welfare series of 1964.

The stamps with this theme from the British Commonwealth seem to have been confined, up to now, to India's Children's Day 15np. of 1961 showing a boy operating a lathe and two stamps of Pitcairn Island's definitive series of 1957 depicting handicrafts sold as souvenirs to tourists. The 2½d. stamp showed a carved wooden bird while the 1/- stamp depicted a model of the famous *Bounty* whose mutinous crew first settled on the island.

A model of a different kind altogether appeared on the three stamps issued by Sweden in 1946 to commemorate the 800th anniversary of Lund Cathedral. They depict a statue of an angel holding a model of the cathedral—a case of the modeller modelled.

THANK YOU

We would like to thank the scores of readers who have taken the trouble to write to the Editor expressing their good wishes for the success of the new magazine. While the contents of all such letters are all thoroughly digested, it is unfortunate that we cannot reply individually; we still have a magazine to produce! Thank you all *very much*, and keep 'em coming—we want to know *your* views.

A
2 off
1/8 sht.

Balance point under front lead-out wire

F

F

Washer

8 B.A. bolt

Wing section A

Cut out

Fuselage 1/2" sht.

Mount drilled for Cox .049

A

Mercury wedge stunt tank (Starb'd side)

Tissue line

Engine starbd. side

C

Wing sht.

1/8 sht

16 s.w.g.

For wing section B

B 3/32 sht.

1.1/2" K.K. streamlined plastic wheels

C

2 off 1/16 ply

D. 4 off 1/4 x 3/16"

E. 2 off 1/4" x 3/16"

Round off

U/C mount 1/8 ply

Bind and cement leading edge

B

Tailplane and elevator 3/32 sht.

With Cox Medallion engine use Cox-Triang 6" diam. 3" pitch plastic prop

Washer

Solder

Line guide

Cut out

Linen tape hinges

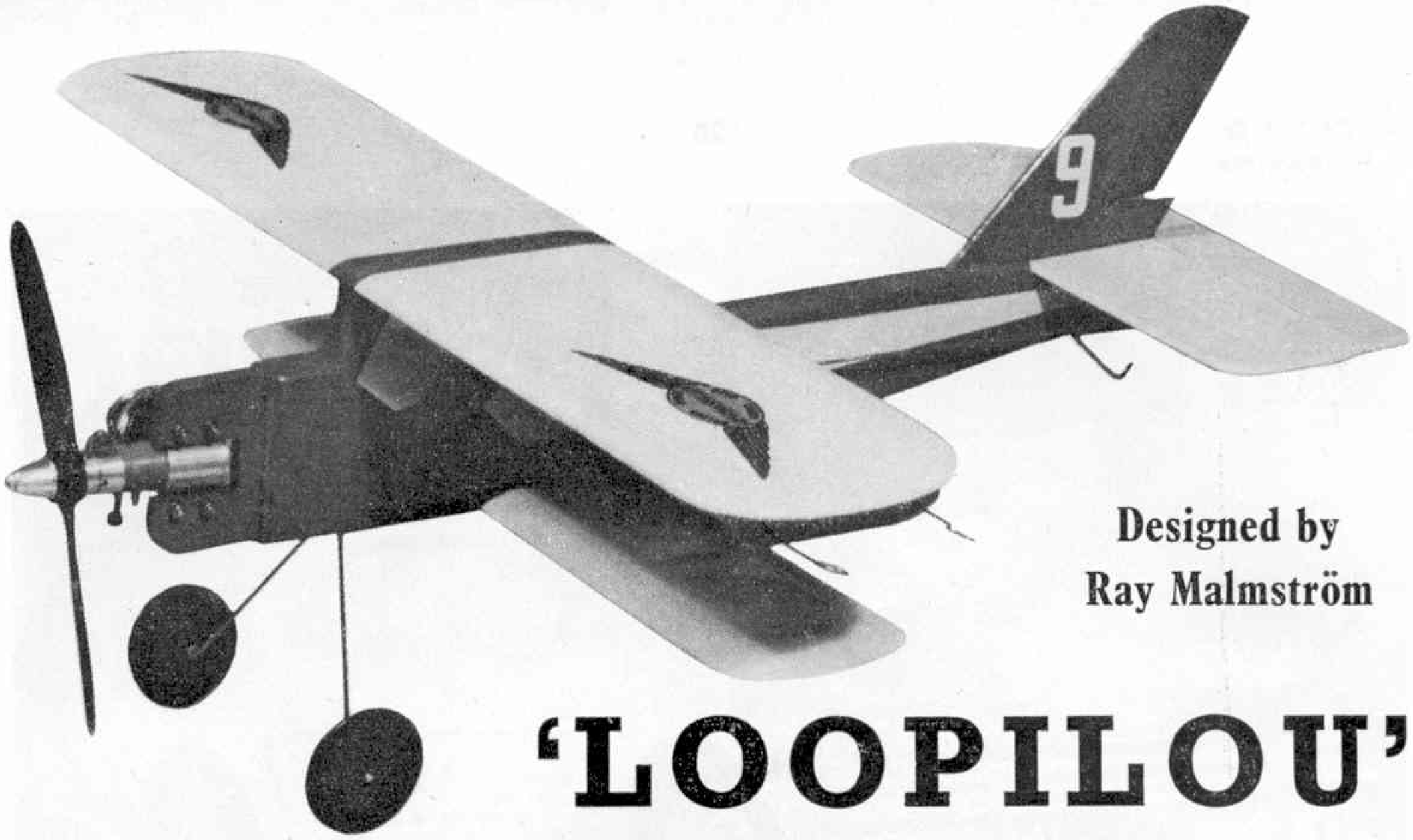
Linen tape

Loopilou

AEROBATIC TRAINER C/L MODEL

FOR BEAM MOUNTED GLOWPLUG OR DIESEL ENGINES UP TO 1 cc.

Control horn 1/16 ply



Designed by
Ray Malmström

'LOOPILOU'

A 16 inch wingspan, control line, biplane sports model

SO YOU want to try wing-overs and loops, and if you can acrobat around the sky with a biplane, instead of an "in-the-rut" monoplane you'll jump at the chance. O.K. so start jumping—"Loopilou" is here just for you! She's an easy-to-build, two-winger that wing-overs and loops while the others are taking-off!

Construction

Cut the fuselage from $\frac{1}{2}$ in. sheet, noting cut-out areas and fin slot. Form skid and fix with linen tape, well cemented. Sand rear of fuselage to section shown and cement piece B and cabin windows in place. Drill holes to suit your engine, in $\frac{1}{4}$ in. ply engine mount. We recommend the powerful, light and easy-starting Cox .049 Medallion. Other suitable light-weight engines are: D.C. Bantam, Wen-Mac 049, D.C. Merlin. Firmly cement engine mount in position, checking alignment with fuselage. Add filling piece A. Bend undercarriage wire, bind to mount, cement well and assemble into undercarriage slot on fuselage. Add wheels and $\frac{1}{16}$ ply pieces C. Cover the rear fuselage with lightweight tissue, and apply two coats of clear dope. Cut tailplane and elevator from $\frac{3}{32}$ sheet, then join with tape hinges, checking for free movement. Give two coats of clear dope and cement to rear of fuselage. Check that the tailplane is at right angles to fuselage, with a set-square. Cut out fin and offset rudder $\frac{1}{4}$ in. to right (model viewed from rear), again apply two coats of clear dope, and cement into fin-slot.

Wings

Two wing sections are shown on the plan, "A" and "B." "A" section wings are for wing-overs, loops and sports flying. "B" section wings are symmetrical and help when flying inverted, the choice is yours. Cut wings from $\frac{1}{4}$ in. sheet, add ribs (E lower D upper) and sand to chosen section. Cover with lightweight tissue, applying two coats of clear dope. Assemble lower wing to fuselage, checking alignment with fuselage and tailplane. The bellcrank mount is from $\frac{1}{4}$ in. ply, and the 8 B.A. bolt to hold the bell-crank *must* be a tight screw-fit. Cut bellcrank from $\frac{1}{16}$ in. ply, drill and attach push rod (noting the angle) and lead-out wires, leaving them over-length at this stage. Assemble bell-crank unit to bellcrank mount, then cement the unit accurately into place on the undersurface of the top wing. Add line-guide and wing-tip weight (sheet lead or folded empty cement tube) to undersurface of top wing.

Assembly

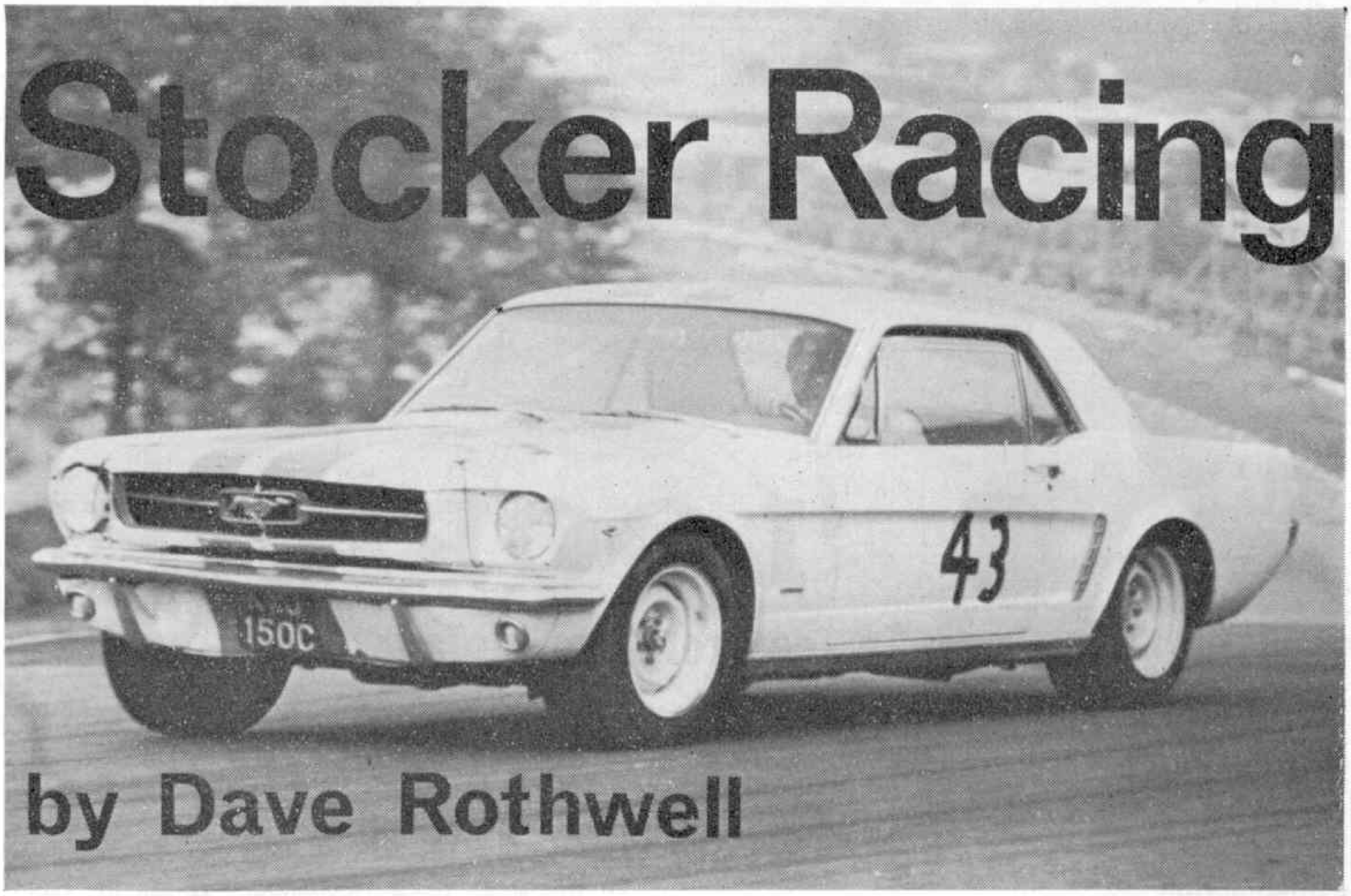
At this stage, paint "Loopilou." If you use Humbrol enamels, there's no need for a coat of fuel proofer. Waterslide transfers are protected by a thin coat of clear varnish. Now assemble the top-wing to the fuselage, the bellcrank mount locking into the cut-out on the fuselage. Cement well, checking that both wings are parallel and have equal gap (distance between the wings) on both sides. Finally add blocks F-2 and G-2 to reinforce the wing-fuselage joint. Cement the $\frac{1}{16}$ in. ply control horn to the elevator, reinforcing with a patch of linen tape. Lock the elevator at neutral with a length of $\frac{1}{4}$ in. sq. balsa pinned to tailplane and elevator, hold bellcrank at neutral with modelling pins, then cut lead-out wires to equal length and form loops. Bend the push rod and pass it through the hole drilled in the control horn, then bend again to prevent it becoming detached from the horn, and cut off surplus wire. Araldite a Mercury wedge stunt tank to nose piece C, on the starboard side (right side viewed from rear) and bolt the engine to the engine mount. Place $\frac{1}{16}$ in. thick washers under the front of the engine lugs as shown, this off-sets the engine thrust-iine to the right and helps to keep the lines tight.

"Loopilou" is complete except for balancing. The model should balance level when supported by the finger tips under the *front* lead-out wire. With the Cox .049 Medallion, our original balanced perfectly; you may need to add a small amount of weight to nose or tail to achieve the correct balance.

Plan Instructions

The full-size constructional plans on pages 18 and 43 should be removed from the magazine (joined) by undoing the binding staples, removing pages 19-42, and then replacing them. Page 42 shows assembly in easy-to-follow sketch form.

Stocker Racing



by Dave Rothwell

EVERYONE WHO looks at a large car, particularly the American ones, is usually impressed by the sheer bulk of it compared with the average British or Continental type. It's obvious that cars with such bulk have to have correspondingly larger engines than the British or Continental types, to drive them at high speeds and to enable them to accelerate at the same rate, or faster than smaller cars.

It is easier to appreciate the immense size of these American saloon and sports cars if simple engine facts are understood. Let's deal with two English saloon cars and then compare them with their American cousins.

Capacity and power

The Ford Anglia saloon has an engine capacity of 997 cc, the capacity being the volume swept as the four pistons go up and down. Many of you will have heard of the term *Horse Power*. One Horse Power is roughly the equivalent of 100 ccs, so the Ford Anglia with 997 cc is just under ten Horse Power. Ten Horse Power or 1,000 ccs is termed 1 Litre, the term Litre being greatly favoured by the Americans. We, in Great Britain, generally use the cc (cubic centimetre) expression as many of our cars are of such small capacity, that they are under 1 Litre.

We are now in a position to appreciate the truly huge size and power of the American Stocker racing cars. A car of 5.5 Litres or 55 Horse Power is common in the U.S.A., the equivalent in size of 5½ Ford Anglia engines coupled together!

In Great Britain, cars with six cylinders are the exception rather than the rule, but in the U.S.A. 6 cylinders are common and a great number have 8 cylinders.

These big-bangers are the basis for the "Stocker"

Round a bend on the Brands Hatch circuit, in our heading picture, screams a Ford Mustang in full racing trim, with stripes, numbers and enormously wide tyres. The left-hand picture gives a good close-up view of another racing Mustang. The front bumper and number-plate have been removed to reveal the large central air intake for the oil-cooler. The low-mounted air scoops cool the hard-working front brakes

An immaculately turned-out seven litre Ford Galaxy. Once again, the bumpers have been removed, to reduce weight and assist cooling. The four headlamps are taped in typical racing style! Just look at the width of the tyres—there's plenty of rubber in contact with the road here!

A Ford Falcon belonging to Gawaine Baille, at rest in the paddock. The wide-base wheels, with strengthened spokes, are an interesting feature. The broad racing stripes and angled racing number give the front end of this car a very smart appearance.

racing cars and engines of up to 7.5 Litres (7,500 ccs) with 8 cylinders are used, these being larger and more powerful than those used in a double decker bus!

One of the largest high performance British cars, the 4.2 Litre Jaguar, compares as our largest, against the 7.5 Litre "Ford Galaxies" of the U.S.A. The "Galaxy" has made many successful appearances at race meetings in the U.S.A. and Great Britain, and has managed to fight off the Mini Cooper and Lotus Cortinas, which gain so much ground on cornering but lose on the straights. Special wide rimmed wheels with "balloon" or "slick" tyres are fitted to improve the road holding, and the suspension is lowered. The engines are not forgotten; they are tuned to give almost twice the power of the standard road-going car.

Racing American style

Very specially tuned cars compete on the "Drag-Strips." Drag Racing is a timed sprint from a standing start over ¼ or ½ mile, the winner having the lowest elapsed course time. The engines are started and revved up, the clutch is released, and the sudden surge of power transmitted spins the rear wheels causing the tyre surface to melt and smoke with the frictional heat. When the tyres grip, the front of the car lifts up to *six* feet off the ground and stays airborne until high speed is reached; this is termed a "Wheelie."

Perhaps one of the best known "Stocker" engines is that fitted into the Le-Mans winning Ford G.T's with 70+ Horse Power. Carol Shelbey, who runs a Customising and Car Tuning Service in the U.S.A., specialises in fitting large American V-8's into British sports cars, and has had a great deal of racing success with the "A.C. Ace" as it is known in Great Britain, renamed the "Shelbey Cobra Ford" after such treatment.

Try to imagine you are in the pits at Daytona, U.S.A., at the start of a racing event. On the starting line 15 "Stockers" are lined up, engines running, and the noise is almost unbearable as the highly tuned engines are revved up to peak power. The whole starting grid is a mass of colour; these cars are, almost without exception, painted in brilliant reds, golds and yellows, and are covered with transfers advertising the many specialised parts fitted for racing. The flag drops and the cars are away! The noise is almost unbelievable, tyres squeal as wheels revolve; the cars are only just starting to move, smoke from the tyres rises into the air, and, as they gain a grip on the tarmac, the "Stockers" leap forward fighting for a good position. These cars reach speeds well in excess of 120 m.p.h. (in 440 yards!) and use a gallon of fuel every 5 miles while racing.

Stocker modelling

So there we have a brief picture of what "Stockers" are. It may not be possible for many of us to see these cars, but to a certain extent we can capture some of the excitement in our own front rooms with Slot Car racing. It is possible to buy ready-made cars, such as the one shown in the photograph—a large "Ford" manufactured by Cox of America—a faithful copy of the real thing. Unfortunately due to its size (1/25 scale) this car will not race on the normal *slot car* tracks, so this, plus the fact that it costs over £5, puts it out of the reach of most of us. You can purchase small body shells for these cars and, with a simple ready-to-use chassis, construct a car to use at home on your own track. Body shells fall into two categories (1) "Blob" bodies, thin, transparent body shells all in one piece which can easily be fixed to a chassis by using ordinary pins and (2) injection moulded bodies. These are made of a more brittle plastic, a lot thicker and usually coloured so that they do not require painting. Building cars from various bits and pieces is far more fun, and always cheaper than buying them ready-made.

Keeping it in the slot

One of the most spectacular feats performed by a "Stocker" is a "Wheelie." If you construct a model car, and use one of the powerful competition motors that are available, this startling effect can be achieved by your model. This, however, creates a small problem. If you lift the front of your car off the track, naturally the braided pick-up will no longer be able to make contact with the current supply, and the motor will stop. In actual practice, this means as soon as you push the hand controller down hard, the front of the car will rise due to the power of the motor turning the rear wheels; the braids will lose contact as the slot

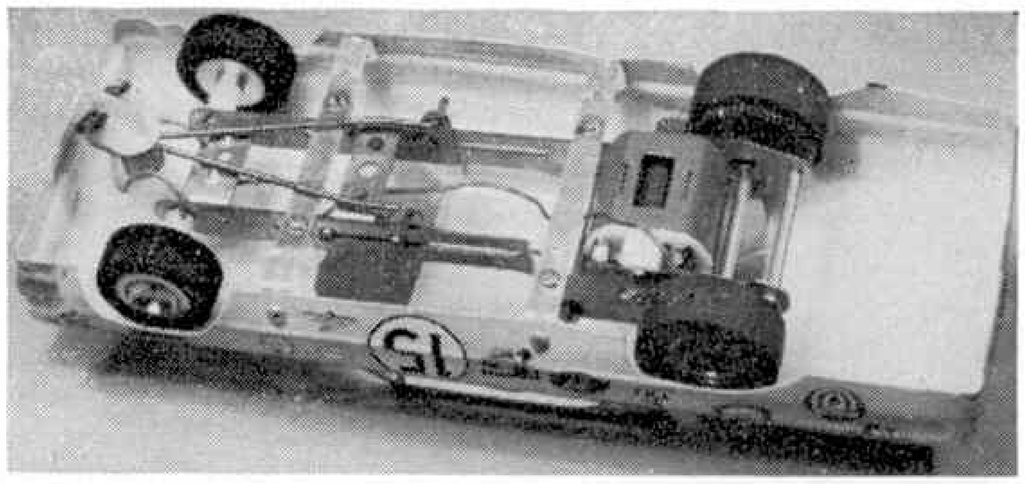
(Continued on next page)

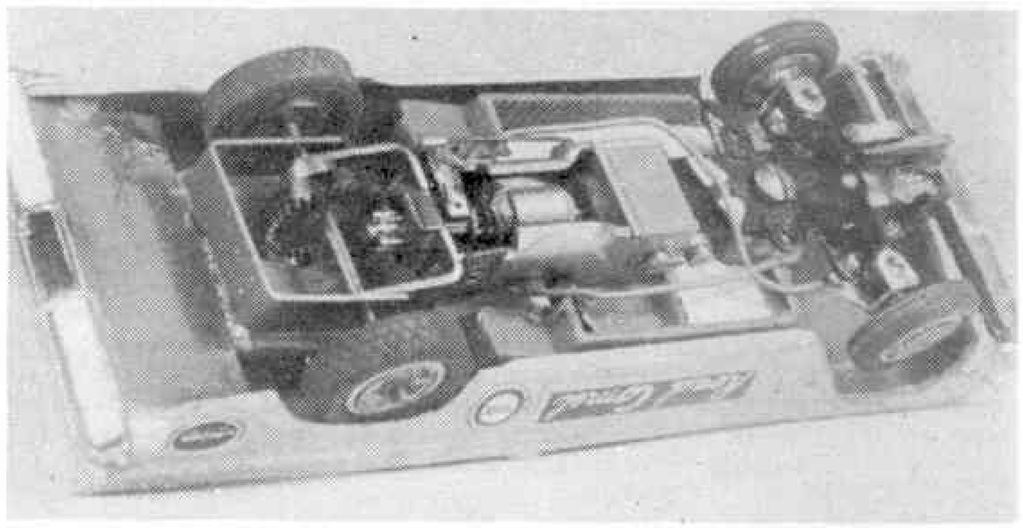
guide comes out of the slot, and the motor will stop. In all probability, when the front of the car drops again, the slot guide will fall outside the slot and the car will not move.

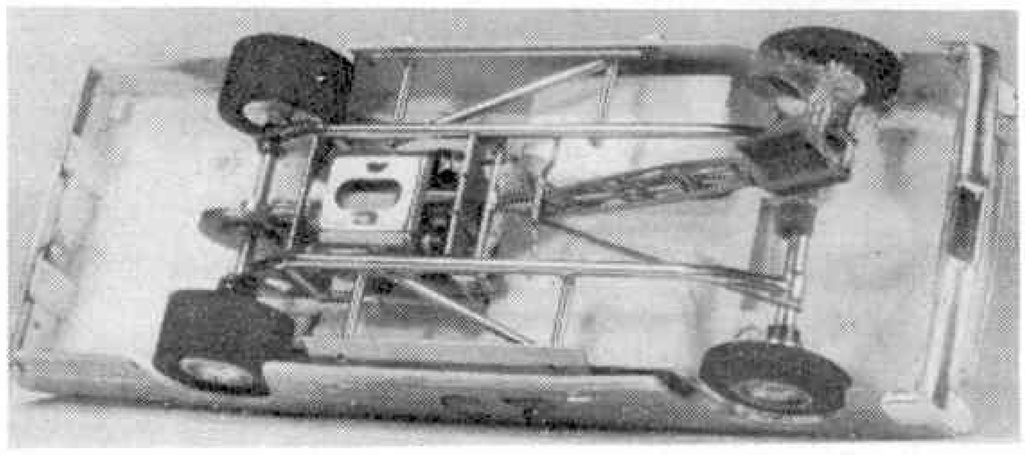
The way to overcome this problem is quite simple. The slot-guide shoe is placed on a long pivoted arm, so when the front of the car lifts it will pivot on the arm leaving the shoe in the track, still feeding power to the motor. It's common to find the arm sprung downwards with tension from a rubber band, so that even when the car leaps up and down whilst racing, the shoe is pressed into the guide to keep the car on course, and the pick-up braids are in constant contact with the track, supplying the motor with continuous current.

Having created a model capable of leaving the track to a certain degree, but still being able to control it, we should consider using all the power we have to the best advantage. It's not much use having a powerful model if the means of conveying the power to the track (i.e. tyres) are of the wrong sort.

It is easy to appreciate that the more rubber in contact with the track surface the better the car's road-holding will be. A perfectly smooth soft tyre is far better than one with treads on, for the simple reason that a treaded tyre has gaps between each tread strip which obviously cannot grip the road at all, whereas a smooth soft tyre has all its surface on the track. In case you are wondering why there are treaded tyres if smooth ones give better grip—read on.





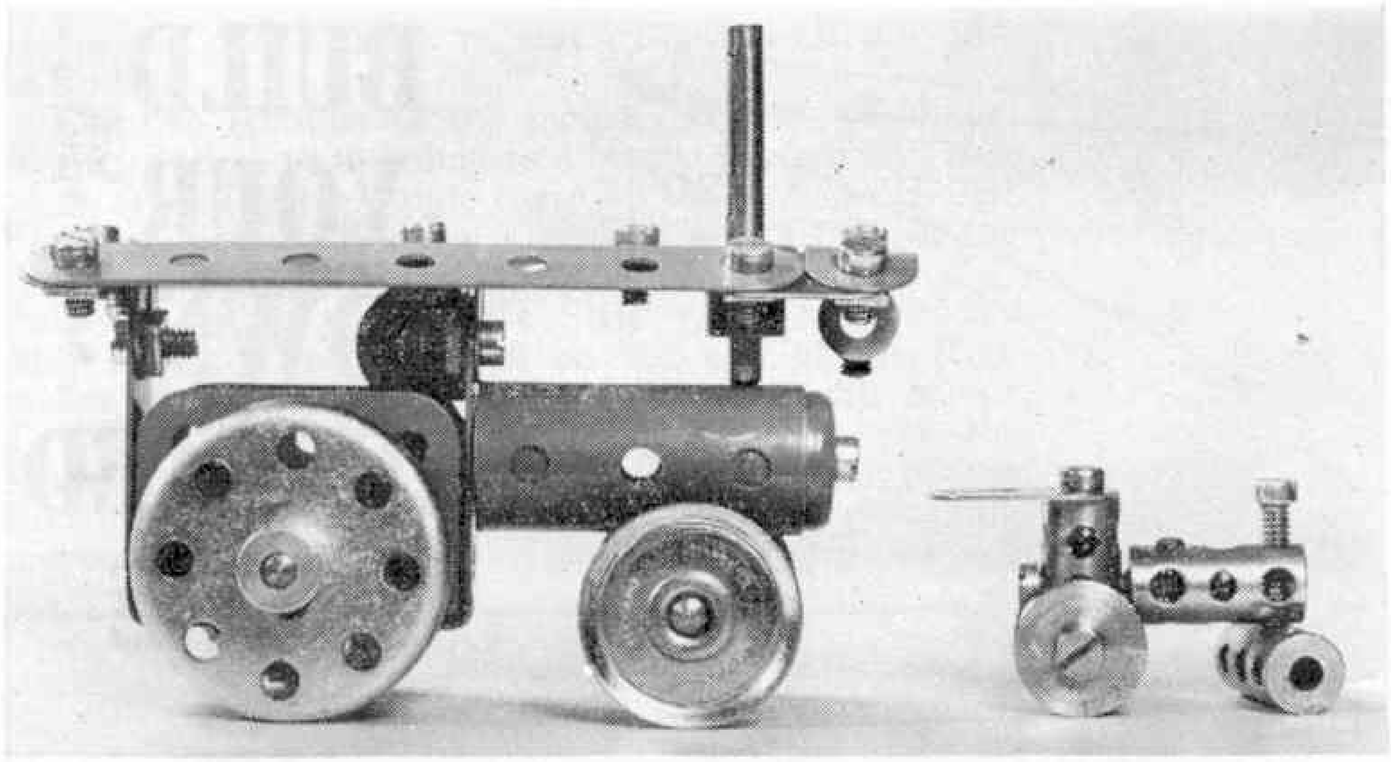


Top of page: This "blob" bodied Ford Galaxy is powered by a Mabuchi "tincan" Motor, mounted sideways in a frame made from scrap brass. The smooth, wide "slicks" can be clearly seen, together with the slot-guide and pick-up braids at the extreme front end. Centre: This complex looking chassis is a combination of MRRC motor and steering unit, coupled to Supershells wheels and axles. Above: underside of Dan Gurney's Ford Stocker. The Mabuchi "tincan" motor is mounted "in line" this time, and the chassis is tubular and nickel-plated.

The air spaces between the treads of a tyre are channels to allow water drainage in the rain, thus keeping the actual tyre surface comparatively dry. The "slick" or smooth tyre cannot throw water off because it has no channels in which to clear the water. It's hardly likely that your model track will be subject to sudden showers, so smooth tyres are best.

It is possible to build a good car for as little as 30s., so next time you are thinking of buying a model, or if your birthday is close at hand, why not build a "Stocker" and enjoy the fun of racing a *real* car.

Top left: This Ford Galaxy is built from a clear plastic "blob" body (see top of page for underside view). If carefully painted and decorated, these bodies can look very realistic, as the picture proves. They also have the double advantage of being cheap to buy and light in weight. The advertisements plastered over the sides of the car are a characteristic feature of American Stockers. Centre left: A Ford Thunderbird, also using a plastic body, and sporting a very gaudy colour scheme. Left: This impressive replica of the famous Dan Gurney Ford Stocker runs on a tubular chassis. The rear tyres, which transmit the power of the motor to the road, are very much wider than the front tyres, which really only serve to support the front of the car. Note the huge racing number on the roof!



Simply Ageless

Two from the '20's by Spanner

They might be father and son! A tiny Traction Engine and an even smaller Steam Roller rebuilt from a 1929 issue of Meccano Magazine.

PICTURED IN the October 1929 issue of *Meccano Magazine* was a fascinating group of miniature models built by readers. As prize-winners in a "Simplicity" Model-building Contest—where the idea was to turn out the easiest possible models without abandoning realism—they made an instant hit with all who saw them. By this time, the competitors who produced the originals nearly 40 years ago are probably fathers or even grandfathers, but the little models themselves are as fresh and appealing now as they were when they were built—witness the two examples rebuilt here!

Both models go back to the age of steam and, quite frankly, we were captivated when we saw them. The first, although not to be confused with the model shown on our cover, is a Traction Engine only four inches long—and if you think that's small, the other, a Steam Roller, is *less than two inches long*.

By their nature, both models are extremely easy to build, though not produced from any particular Outfit, and yet neither can possibly be mistaken for anything other than the object it represents. In the case of the Traction Engine, a 4½ in Strip 1 is shaped as shown and bolted to a Channel Bearing 2 to represent the body, while the boiler is provided by a Sleeve Piece 3 with a Chimney Adaptor wedged at each end. The rear Chimney Adaptor is bolted to Strip 1 as also is an Angle Bracket to which a ½ in loose Pulley is lock-nutted. Three compound 4 in strips, connected at each end by a 1½ in Strip, supply the canopy, each compound strip consisting of a 3½ in Strip extended by a Fishplate. The canopy is attached to the ends of Strip 1 by Angle Brackets.

Two 1½ in Contrate Wheels act as the rear road wheels, being mounted on a 2 in Rod, held in Channel Bearing 2 by Collars. The front wheels—two 1 in Pulleys with boss—are fixed on a 1½ in Rod journalled in a Double Bracket which is lock-nutted to Sleeve Piece 3. The chimney is a 1 in Rod, held in a Crank bolted to the underside of the Canopy, and extended by a Rod Connector. A Collar 4 acts as the generator.

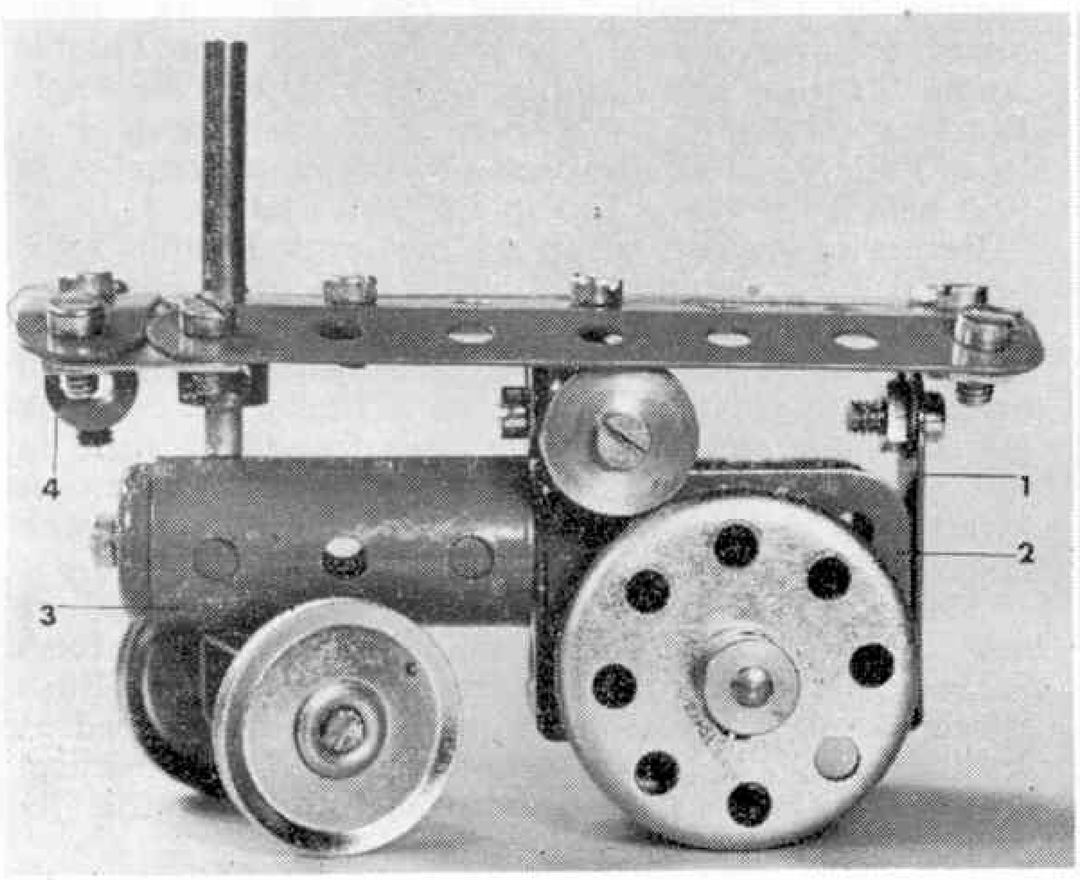
No building instructions are required for the mini Steam Roller. Suffice it to say that it consists of three Couplings, two ½ in loose Pulleys and a Fishplate, all held together by suitable Bolts. Amazingly simple!

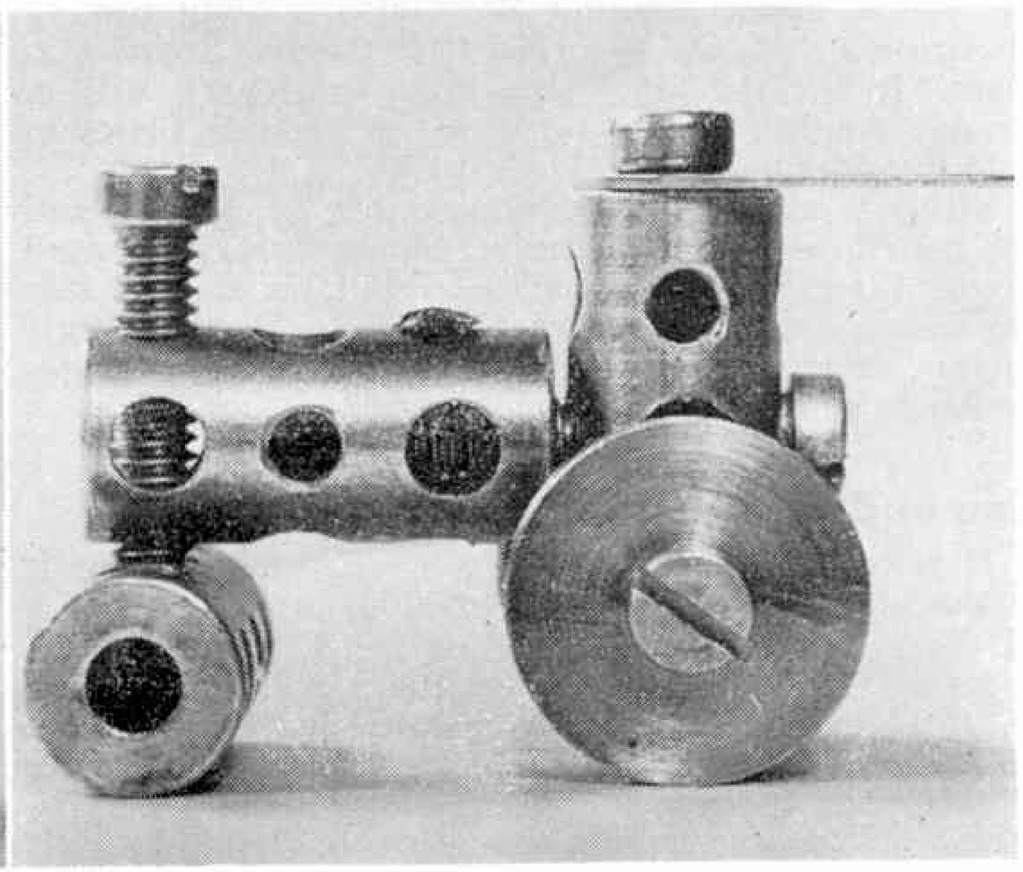
Parts Required

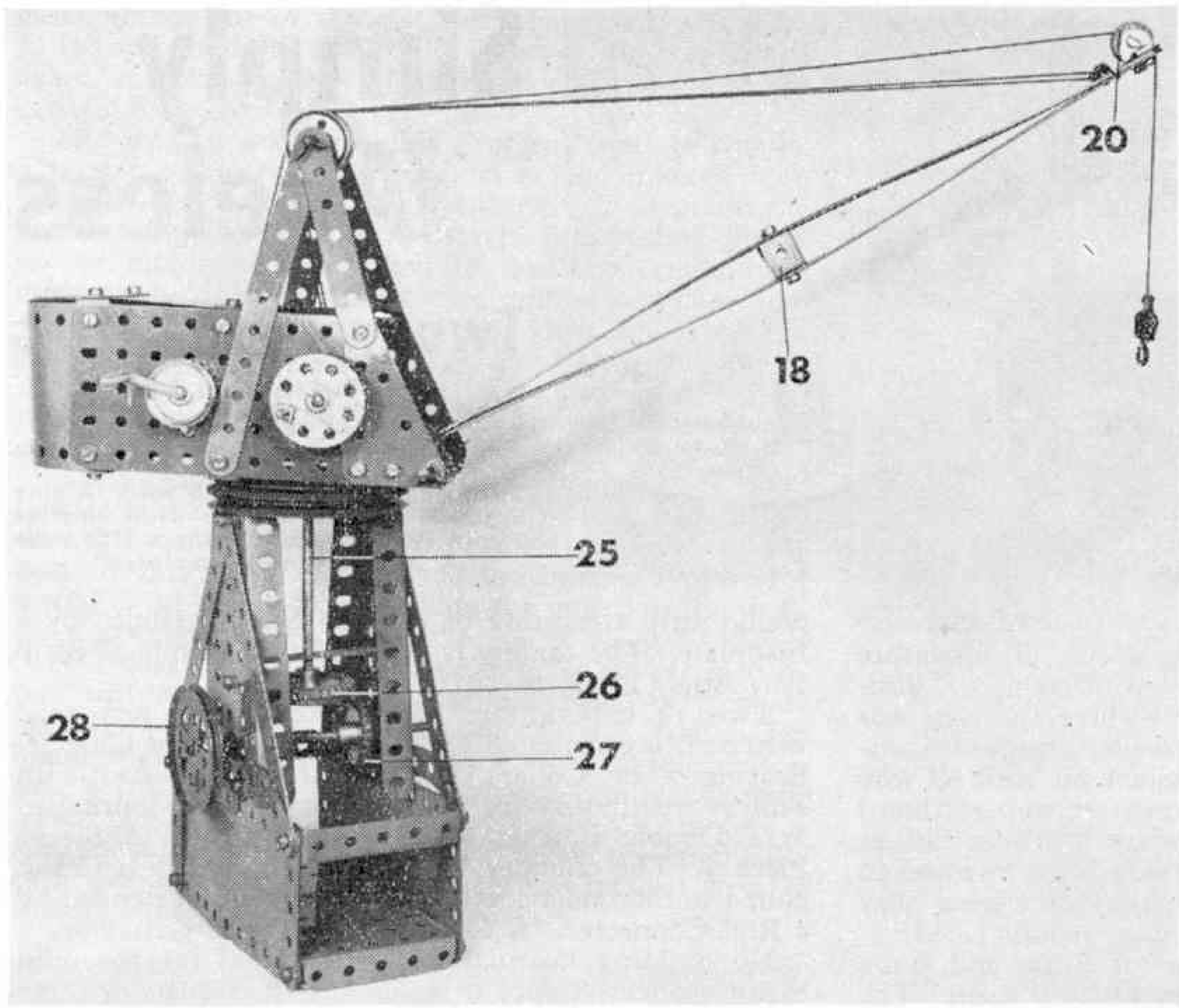
Traction Engine		Steam Roller
1—2d	2—3	1—10
2—6d	3—10	2—23
1—11	3—12	1—37b
1—17	1—18a	3—63
1—18b	2—22	2—111a
1—23	2—28	2—111c
17—37a	16—37b	
4—59	1—160	
1—163	2—164	
2—213		

Despite the utter simplicity of the Traction Engine, there's still no doubt as to what it is.

The Steam Roller—three Couplings, two Pulleys and a Fishplate held together by Bolts.







BUILD YOUR OWN ELEVATED CRANE

A No. 4 Meccano Outfit model by Spanner

This Elevated Crane built from a No. 4 Meccano Outfit, reproduces all the movements of its full-size counterparts.

THE POSSIBILITIES of Meccano as a miniature engineering system are limitless. Almost anything mechanical can be reproduced in Meccano but, at the same time, it is true to say that some full-sized machines lend themselves more readily to reproduction than others. Cranes are a typical example and, for this reason, cranes have been a mainstay of Meccano builders since the invention of the system. It's only right therefore, that a crane should be featured in the first issue of the new M.M., and so a crane we offer. The example illustrated is an Elevated Crane and can be built with Meccano Outfit No. 4.

Construction is quite straightforward. A base is built up from a $5\frac{1}{2} \times 2\frac{1}{2}$ in Flanged Plate, to each side flange of which a $5\frac{1}{2} \times 2\frac{1}{2}$ in Flexible Plate 1 is bolted. The side and upper edges of the Plate are overlayed by two $2\frac{1}{2}$ in and one $5\frac{1}{2}$ in Strip, respectively, the upper securing Bolts also holding two $5\frac{1}{2}$ in Strips 2 and two $2\frac{1}{2}$ in Stepped Curved Strips 3 in place. In addition, the same Bolts fix two $2\frac{1}{2} \times \frac{1}{2}$ in Double Angle Strips 4 between the Flexible Plates to hold the sides together.

Strips 2 are now brought together at the top and are bolted, along with Curved Strips 3, to a Flanged Sector Plate. The Flanged Sector Plates at each side are then joined by another $2\frac{1}{2} \times \frac{1}{2}$ in Double Angle Strip 5 and by a 3 in Pulley 6, attached to the Plates by Angle Brackets.

Cab and Jib

It is best to complete the cab separately and fit it to the base when finished. Bolted to each flange of a $2\frac{1}{2} \times 1\frac{1}{2}$ in Flanged Plate 7 is a $2\frac{1}{2} \times 1\frac{1}{2}$ in Triangular Flexible Plate 8, extended rearwards by a $4\frac{1}{2} \times 2\frac{1}{2}$ in Flat Plate 9. A $4\frac{1}{2} \times 2\frac{1}{2}$ in Flexible Plate 10 is then curved to shape and fixed to the Flat Plates at each side, the upper securing Bolts holding a $2\frac{1}{2} \times \frac{1}{2}$ in Double Angle Strip between the sides, and the lower securing Bolts holding Angle Brackets, to which a Semi-circular Plate is fixed. Another Semi-circular Plate 11 is bolted, along with a $2\frac{1}{2} \times 2\frac{1}{2}$ in Flexible Plate 12 edged by a $2\frac{1}{2}$ in Strip, to the Double Angle Strip. Plate 12 is attached to the sides by Angle Brackets.

Now bolted to each side of the cab, as shown, are a $3\frac{1}{2}$ in Strip 13 and and a $5\frac{1}{2}$ in Strip 14. These are both brought together at the top and are bent inwards slightly to provide bearings for a 2 in Rod, held in place by Spring Clips and carrying a loose 1 in Pulley with boss 15 together with two 1 in Pulleys without boss 16 and 17.

The jib is easily built up from four $12\frac{1}{2}$ in Strips arranged in pairs. The Strips in each pair are bolted together at their ends, but are spaced apart at their centres by a Double Bracket 18. The pairs, themselves, are joined at one end by a $1\frac{1}{2} \times \frac{1}{2}$ in Double Angle Strip 19 and, at their other end, by two Angle Brackets connected by a $\frac{3}{8}$ in Bolt carrying a $\frac{1}{2}$ in loose Pulley 20. The finished jib is mounted on a $3\frac{1}{2}$ in Rod held by Spring Clips in Flanged Plate 7.

Returning to the cab, a $3\frac{1}{2}$ in Crank Handle 21 is journalled in Flat Plates 9, being held by a 1 in fixed Pulley and a Cord Anchoring Spring. A $\frac{1}{2}$ in Bolt in the boss of the Pulley engages with a Bolt, held by a Nut in Plate 9, to act as a brake. The Crank Handle must therefore be allowed to slide a little in its bearings to enable the Bolts to disengage. A length of Cord carrying a Hook is tied to the Crank Handle after being passed over Pulleys 20 and 16.

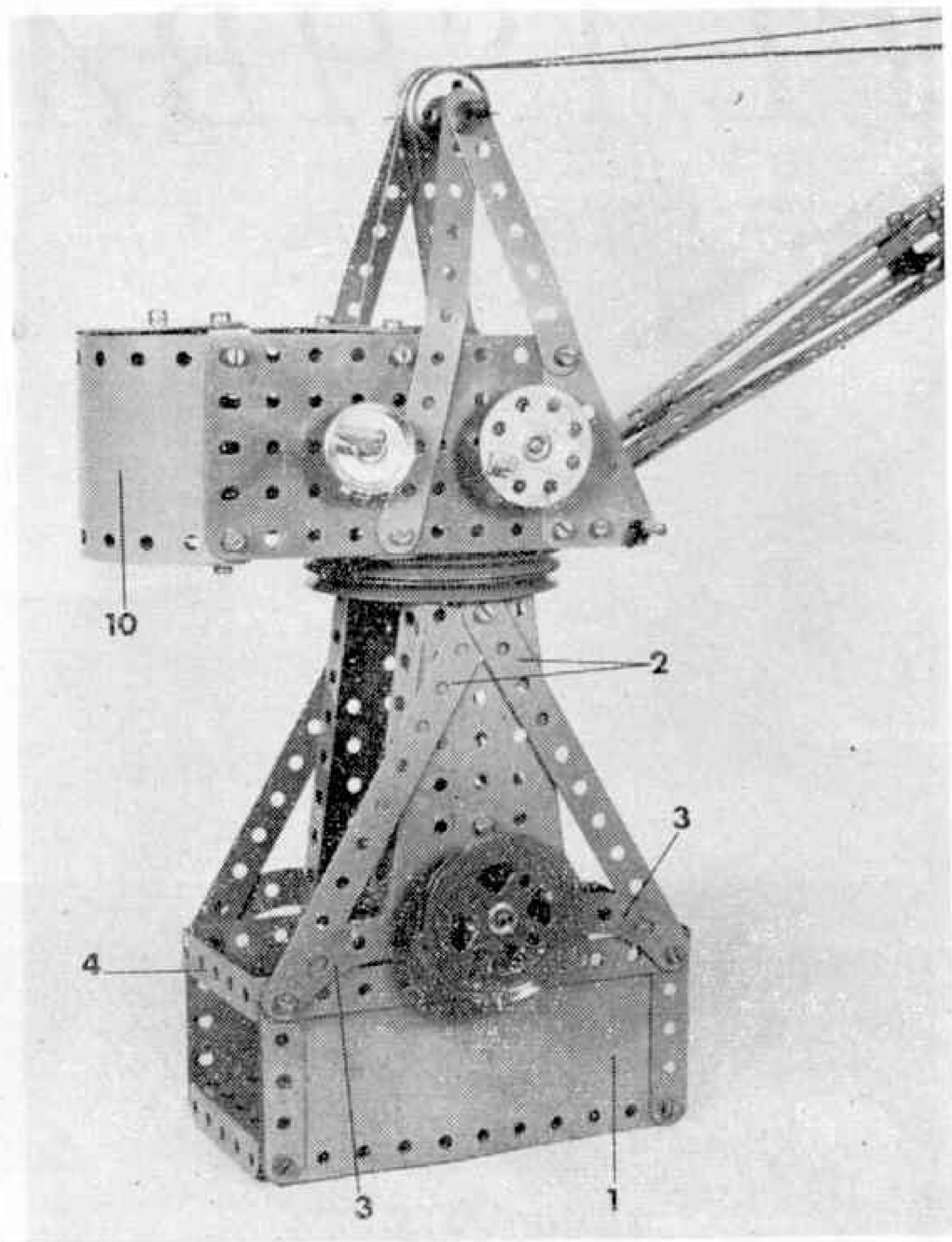
Also journalled in Flat Plates 9 is a $3\frac{1}{2}$ in Rod 22 held in place by a Spring Clip and an 8-hole Bush Wheel. A $\frac{3}{8}$ in Bolt held by a Nut in this Bush Wheel acts as a handle, while a brake is provided as in the case of Crank Handle 21. Two identical lengths of Cord are now tied to the end of the jib,

are passed over Pulleys 15 and 17 and are finally tied to Rod 22.

The two sections of the model can now be joined. A 3 in Pulley 23 is bolted to Flanged Plate 7 and to a $2\frac{1}{2} \times \frac{1}{2}$ in Double Angle Strip 24, fixed between Flat Plates 9. A 4 in Rod 25 is secured in the boss of the Pulley and is then journalled, free, in the boss of Pulley 6 and Double Angle Strip 5. A 1 in. Pulley with Motor Tyre 26, fixed on the end of the Rod, makes contact with another 1 in Pulley with Motor Tyre 27 on another 4 in Rod, journalled in the Flanged Sector Plates. Mounted on the end of the Rod is a 2 in Pulley 28 which controls the swivelling movement of the Crane.

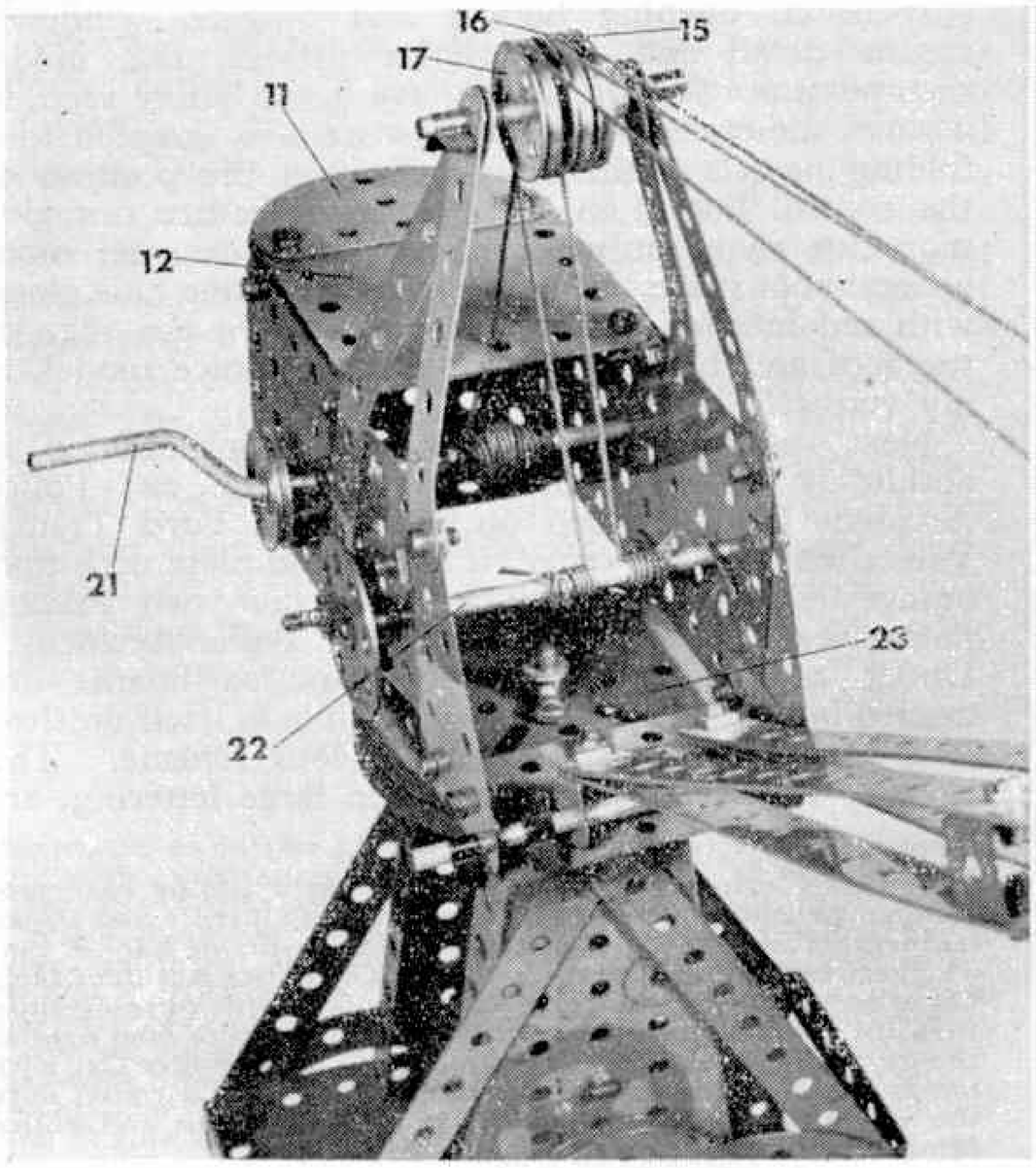
PARTS REQUIRED

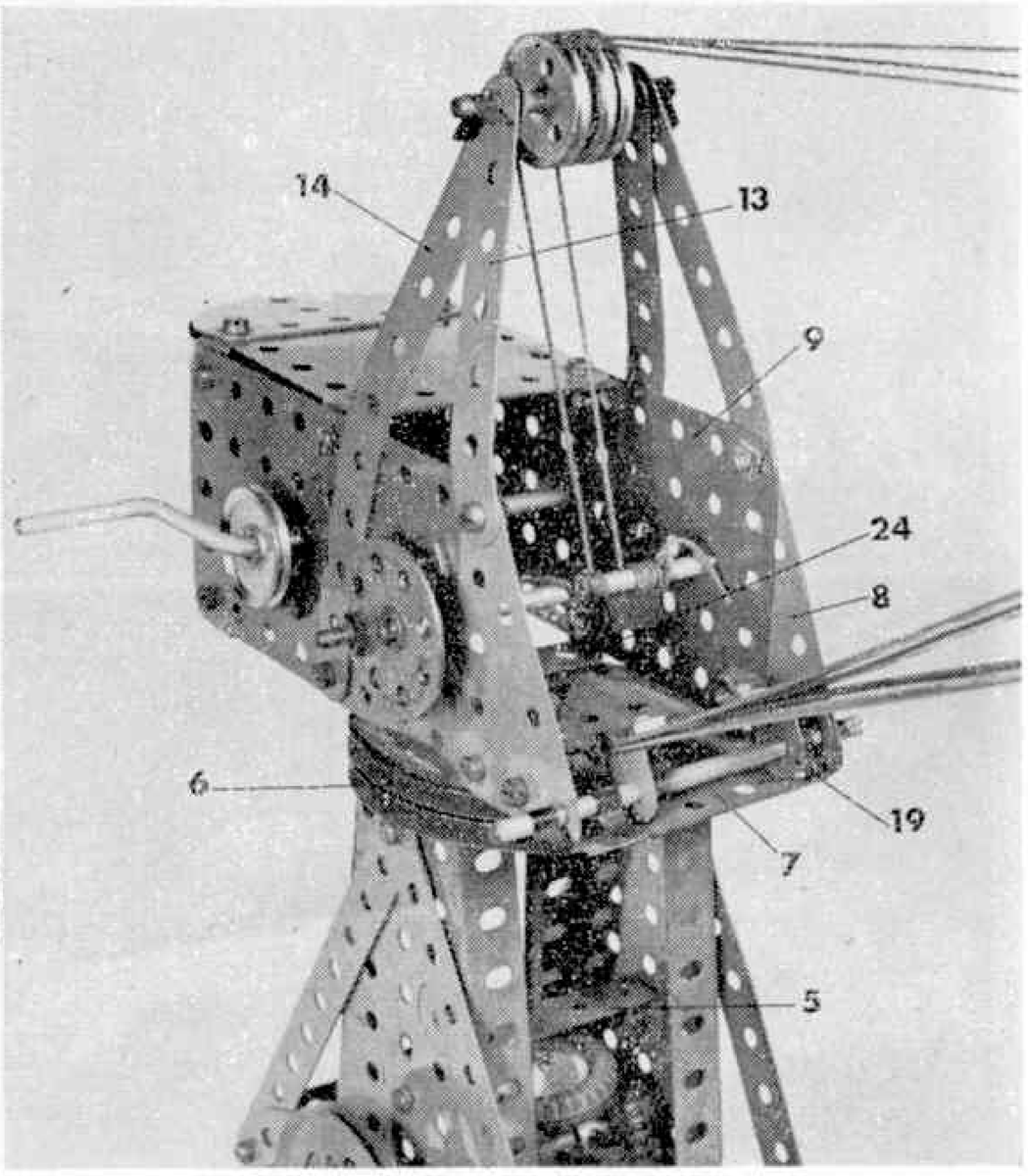
4— 1	48— 37b
8— 2	7— 38
2— 3	1— 40
5— 5	1— 48
2—11	5— 48a
8—12	1— 52
2—15b	2— 53a
2—16	2— 54
1—17	1— 57c
2—19b	4— 90a
1—19g	6—111c
1—20a	2—142c
4—22	1—176
2—22a	1—190
1—23	1—191
1—24	2—192
8—35	2—214
53—37a	2—221



Construction of the Base is clearly shown in this view of the Crane.

Two close-up views showing the construction and winding gear arrangement, looking into the cab.





FLASHBACK!

A glance at the new DINKY TOYS released since the July issue of Meccano Magazine

WHEN PUBLICATION of the old *Meccano Magazine* ended some six months ago, Meccano Limited did not stop making Dinky Toys in sympathy —most definitely not! In fact, since my last M.M. article and up to the time of writing this one (mid October), no less than 11 new Dinkies have appeared on the market, and that's 11 new models that a lot of my regular readers have not heard about. I therefore propose to devote my pages in our first new issue to a quick look at these models, space preventing me from going into greater detail.

First off the line was No. 107 " Stripey—the Magic Mini." Aimed at really young collectors, this model is based on the striped mini car owned by Mr. and Mrs. Bearanda, Candy and Andy in the popular children's comic, " Candy." It consists of the standard Dinky Mini Minor, finished in brilliant red, white, blue and yellow stripes, and comes complete with four little figures, unmistakably recognisable (to Candy readers) as Candy, Andy, Mrs. Bearanda and, of course, Mr. Bearanda. The Mini, itself, is fitted with opening bonnet and doors, tilting front seats, jewelled headlamps, windows, full interior fittings and correct " Candy 1 " number plates.

I have no doubt that, when " Stripey " first appeared, it upset a few purist collectors, but Meccano's sales figures prove that it was welcomed by the age group it was meant for, which is the important thing.

Moving on to model number two, we have the Renault R16, Sales No. 166. In addition to the more usual Dinky characteristics of Prestomatic steering, suspension, opening bonnet and tailgate, windows, engine detail and full interior fittings, this model incorporates a feature that I have never before seen, in a small die-cast toy—a sliding rear seat, coupled to a folding parcels shelf. Depending on the position of the control button in the base, this feature can give more leg room or more parcel space or even more general boot space. Finish is in an attractive blue gloss, with red interior and silver stripes down the edge of the roof and back. All in all, a very nice model, is my verdict.

Next we have a Dinky Toy that, in my opinion, is absolutely packed with play value—No. 287 Police Accident Unit. Based on a modified Ford Transit Van, already in the range, it comes complete with four orange and white warning cones and two folding notice boards, " Police Slow " and " Police Accident." Under normal conditions these notice boards are carried in racks inside the van which is in itself finished in a glaring white and orange colour scheme. The words " Police Accident Unit " in large lettering, are

Left, top to bottom: The Renault R16 has a sliding rear seat coupled to a folding parcel shelf, as well as all the other Dinky features. The Ford Cortina has such a close-fitting bonnet that a release button is fitted to the base! The Police Accident Unit based on the Ford Transit, comes complete with warning signs that are removable; they even fold up! For those who ogle at the new Ford Zodiac Mk IV styling, the Zodiac Police Car with highly detailed engine and *four* opening doors is a must; note the wheel detail. With the Police Accident Unit and Police Mini Cooper, you, too, can have a Police Force.

by Chris Jelley

carried on the sides, while mounted on the roof is a radio aerial and "Police" sign, topped by a simulated blue light, plus an imitation spotlight on an extending mounting. The van proper is fitted with opening doors, seats, windscreen, suspension, jewelled headlamps, number plates and police driver.

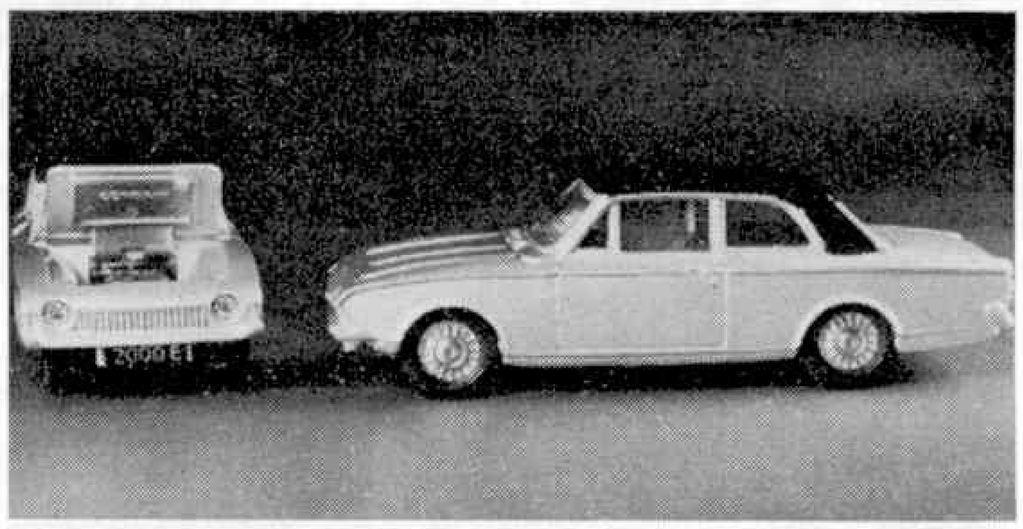
Released more recently were No. 169 Ford Corsair 2000E and No. 250 Police Mini Cooper, both being modified versions of existing toys. The Mini is finished in white with "Police" signs and a radio aerial, while the Corsair has been given a black "dimpled" roof to represent the Vinyl roof of the real car. Both models make handsome additions to any collection, as also does the Dino Ferrari, No. 216. This model, besides superbly reproducing all the lines of the original, has full interior fittings plus opening doors and lifting engine cowl at the rear covering a detailed engine. The twin headlamps are encased in a full-width perspex cowl forming the entire nose of the car. Finish is in a vivid red with pale blue interior, white base, gold wheels and silver-edged engine cowl.

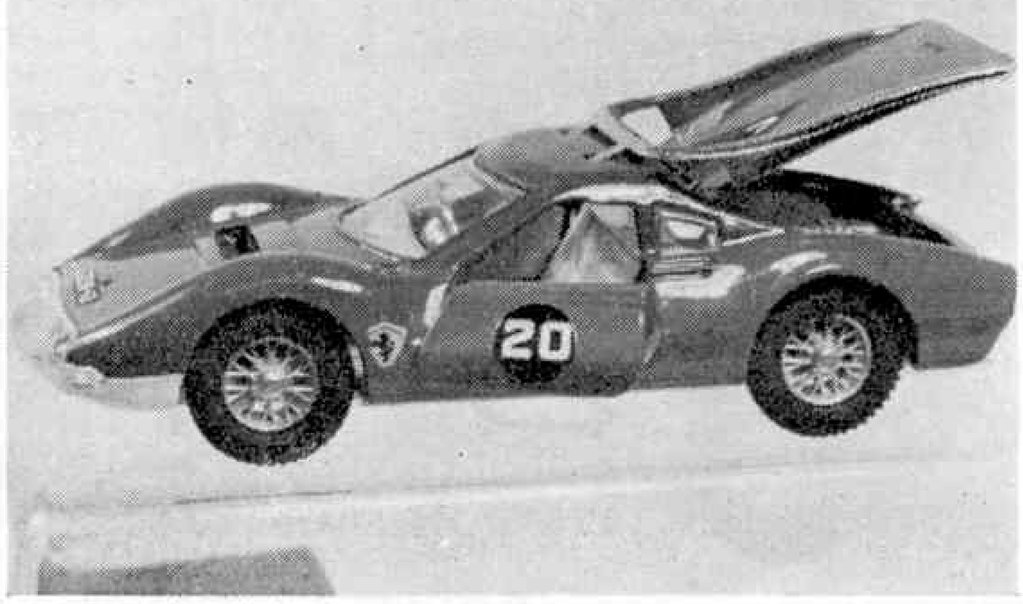
Released with the Ferrari was No. 615 U.S. Jeep with 105 mm. Howitzer. This set is unique to Dinky Toys, being produced to the extra large scale of 1/32nd —a scale that has enabled Meccano to make the gun a *working* model as well as giving the Jeep special features such as removable jerry-can, radio aerial, and driver as well as the driver's helmet. The gun is spring-loaded and fires a plastic shell, six of which are packed with the set.

Another model to appear recently was No. 159 Ford Cortina De Luxe. Based on the latest version of Ford's highly successful family saloon, it is fitted with *all* Dinky action features including opening doors, bonnet and boot, tipping front seats, Prestomatic steering and 4-wheel suspension, plus windows and seats, etc. The bonnet fits so snugly that it is opened by pressing a small button in the base!

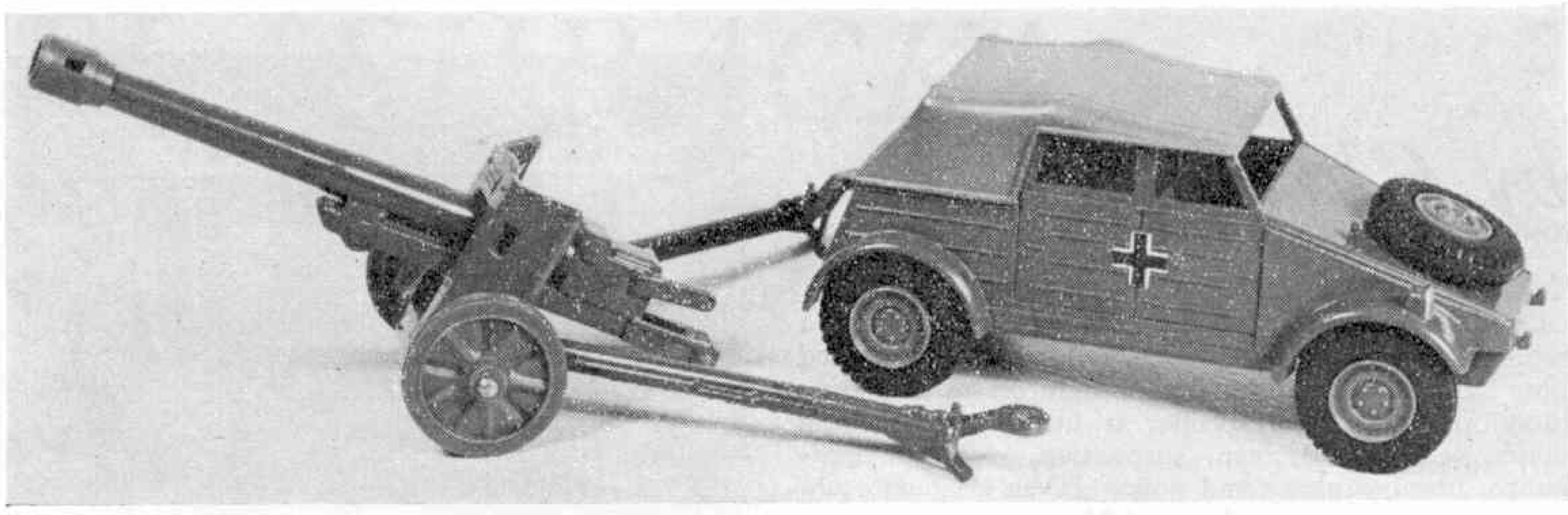
The car released with the Cortina—No. 160 Mercedes-Benz 250 SE—made die-cast modelling history by being the first model to be fitted with working stop-lights! Powered by a 1½ volt battery, the stop lights flash on when the back of the model is pressed down. Other Dinky features, of course, are also present, while the casting itself is first class. Finish is in a metallic blue gloss with white interior and silver base.

(*Continued on next page*)





Right, top to bottom. Stripey the Magic Mini, really eye-catching with multi-coloured stripes, complete with Mr. and Mrs. Bearanda, Candy and Andy as in the "Candy" comic. The Corsair 2000E has all the usual Dinky working features and a black imitation Vinyl-finished roof, just like the real thing. A first for Dinky was the introduction of the Mercedes Benz 250 S.E. complete with "battery operated stop-lights," that come on when the rear of the car is depressed. One of the prettiest die-cast models for a long while is the Dino Ferrari, with super detailed engine and wheels, plus opening doors and engine cowling, in Ferrari red, of course!

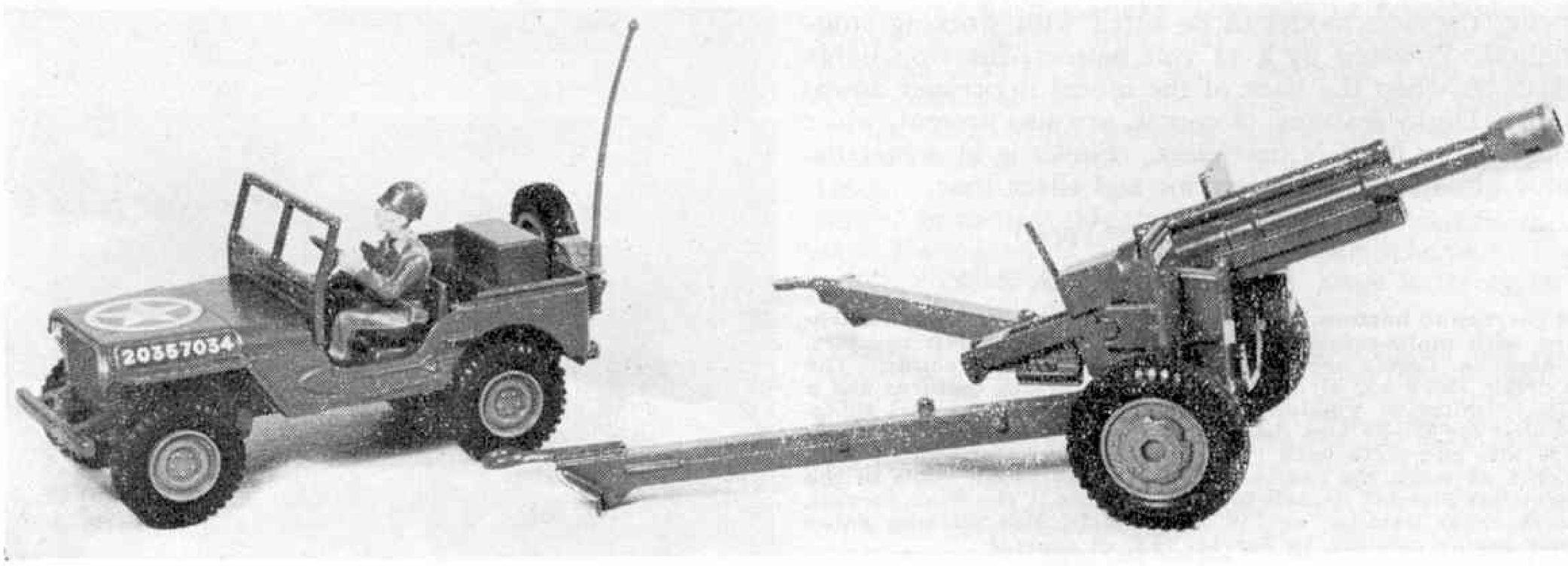


For Wargamers, and those who like models that do something, the shell-firing Volkswagen KDF with a 50 mm. P.A.K. anti-tank gun is a must. This is to 1/32 scale to match the U.S. Jeep and Howitzer

Finally, we come to the two most recent new Dinky Toys, No. 255 Ford Zodiac Police Car and No. 617 Volkswagen KDF with 50 mm. P.A.K. Anti-tank Gun, the last a bit of a mouthful! The police car makes an excellent companion for the Accident Unit and Mini Cooper, mentioned above, being finished in white with the usual insignia and "Police" signs. Like the Cortina, it is packed with all Dinky action features and actually qualifies as the most complicated Dinky in existence—it's built up from as many as 50 individual components! The military set is produced to match the U.S. Jeep and Howitzer. Like the American weapon, the P.A.K. is produced to 1/32nd scale and fires little shells. If you own both sets, you can have some marvellous battles!

Yet another Police car, this time a white Mini Cooper complete with "Police" signs, radio aerial, opening doors, bonnet and detailed engine. Note the rear view mirror and windscreen wipers.

This U.S. Jeep, with a 105 mm. Howitzer that fires shells, has such extras as removable jerry-can, radio aerial, driver and even the driver's helmet; six shells are packed with the set.



BEATTIES PASTIMES REVIEW

No 3 CHRISTMAS 1967

WELCOME MECCANO MAGAZINE

When the Meccano Magazine ceased publication we were left with no "Pastimes" magazine and we tried to fill the breach. This was not practical but the crisis has passed and we can now welcome the Meccano Magazine under a stable and progressive management.

The "Pastimes Review" will continue as our "House" organ and it will appear from time to time. Those who subscribed to it as a monthly magazine are receiving the Meccano Magazine instead.

OUR WONDERFUL SHOPS

At Holborn, Southgate and Manchester, we have seven shops filled with huge stocks and a willing staff ready to serve you. They are naturally under considerable pressure at this time of year and we crave your indulgence and ask you to help them to spread the load.

All our shops are open all day Saturday. Holborn is a good place for Saturday shoppers because parking is easier and the pressure is less than on other days. Holborn has a late night on Thursday and the other shops on Friday. If you can call in the evening before seven you will find it easier to get extended service.

NEW LEAFLETS

Send a stamped addressed envelope for our new Leaflet and Meccano order form.

TRIANG-HORNBY SUPER SERVICE

We sell more Tri-ang-Hornby than anything else because we hold huge stocks and give a very good service. Our staff are ready to advise and help you to get the best results from your trains but you can save time if you will get the Tri-ang-Hornby Catalogue and (1/6) Plan Book for Super 4 track (4/6). There may well be a shortage of some railway goods this year, the demand has surprised manufacturers but we have tried to arrange good supplies of everything essential.

ORDER A LAYOUT

The track supplied with a train set is frustratingly inadequate. You can order track sets but it is better to order a complete layout from the SUPER 4 Plan Book so that there is a reasonable chance of enjoying the trains over Christmas.

MAIL ORDER SERVICE

Our Mail Department handles several hundred parcels a day at this time of year. We have a staff of nine and we reckon to despatch all items in stock within 48 hours. Remember that the post is taking three days each way so do not get worried if you hear nothing for 7/10 days and please DO NOT PHONE about orders, we are unable to deal with phone enquiries about deliveries.

Please help our staff by writing clearly—put NAME & ADDRESS at the top of your order and do not put queries with your order. Use a separate sheet of paper.

SELECTING A TRAIN SET

We always advise starting with a goods set, you can do so much more with it—a large passenger train looks rather silly racing round a small oval. These are the sets we recommend:—

RS51 "FREIGHTMASTER" set ...	112/3
RS24 "PICK UP" GOODS set ...	66/6

Then you must have some extra track so we suggest:—

R429 Twin line conversion ...	43/-
R439 Passing Loop set	26/2
R454 Siding Set	15/4

These are the track-only prices for the layouts in the SUPER 4 Track Plan Book:—

PLAN 1	40/-
2	55/6
3	81/6
4	122/6
5	173/6

(deduct 20/- from above prices to allow for track in a set).

PASSENGER TRAIN SETS

RS9 "INTER CITY" set ...	129/2
RS52 "BLUE PULLMAN" set ...	110/2

WRENN-HORNBY TRAIN SETS

These are special 2-rail sets with Wrenn Locos & Hornby-Dublo rolling stock.

CARDIFF CASTLE PULLMAN set	137/-
2-6-4 FREIGHT SET	152/6
2-8-0 GOODS/PASSENGER set ...	159/6

There will be only a limited run of these sets which are without track but run on SUPER 4, etc. Locos are available separately.

BEATTIES OF LONDON

15 THE BROADWAY, SOUTHGATE, LONDON N.14
112 HIGH HOLBORN, LONDON W.C.1
28 CORPORATION STREET, MANCHESTER 4

(ALL SHOPS OPEN 9 TO 6 EVERY SATURDAY)

TRAINS — BOATS — CARS — PLANES — MECCANO

KINDLY MENTION "MECCANO MAGAZINE" WHEN REPLYING TO ADVERTISEMENTS

BEATTIES OF LONDON FOR TRAINS – CARS – BOATS – MECCANO

CAR RACING & TRAINS – TWIN PASTIMES

In spite of all their friends could say, cars racing has not taken the place of railway modelling. On the contrary, quite a lot of racing fans have taken up trains as a home hobby and they race cars like they watch football. This is being written weeks before Christmas but we expect to sell as many Scalextric, Airfix and Revell racing sets as we did last year. Home racing is a family affair and there is really nothing to equal it. The popular sets look like being the Scalextric "50" set with flyover, the Airfix 125 Mini-Cooper set and the Revell Super set. Everyone is hoping to see the Revell Banking Units—will they be put back to 1968?

SPECIAL OFFERS A FREE CAR WITH EVERY "50" SET ORDERED.
A FREE POWER UNIT WITH AIRFIX 125 SET (expires 31-12-67).

OUR NEW BOOK DEPARTMENT AT HOLBORN

There seems to be quite a lot of interest in this new venture. Model books are not easy to find but now Mr. Kermode has their sale well in hand. He is also selling Stanley Gibbons Stamp Catalogues and a selection of Philatelic Books while all types of albums can be ordered. Catalogues and albums can be ordered by post from Southgate but we hold no stock there.

MOST POPULAR CHRISTMAS GIFT—GIBBONS "SIMPLIFIED" CATALOGUE **40/-** post 1/6.

MR. WALTER LINES REFUSES TO RETIRE!

When they made Mr. Walter Lines President of the huge Lines Bros. Ltd. organisation at the age of 82, it seems that they started him on a new career. In three years he has built a remarkable factory at Lavant, near Chichester, where he is designing and turning out the fabulous range of "GOOD-WOOD" Pastimes and Toys. We have opened our old Secondhand shop at 3 Dennis Parade for the display of GOOD-WOOD toys and other good wooden items for the 1 to 5 age group and many visitors to our Train and car shops have been fascinated by the fine "Climbing Frames," "Giant Locos," Shutes, etc., made of beech wood down at Lavant. A catalogue is available price **1/-** but we will send it free to anyone interested in Playgroups, Nursery Schools and the like.

COME AND SEE THIS WONDER SHOP

WHERE IS "N" GAUGE GOING?

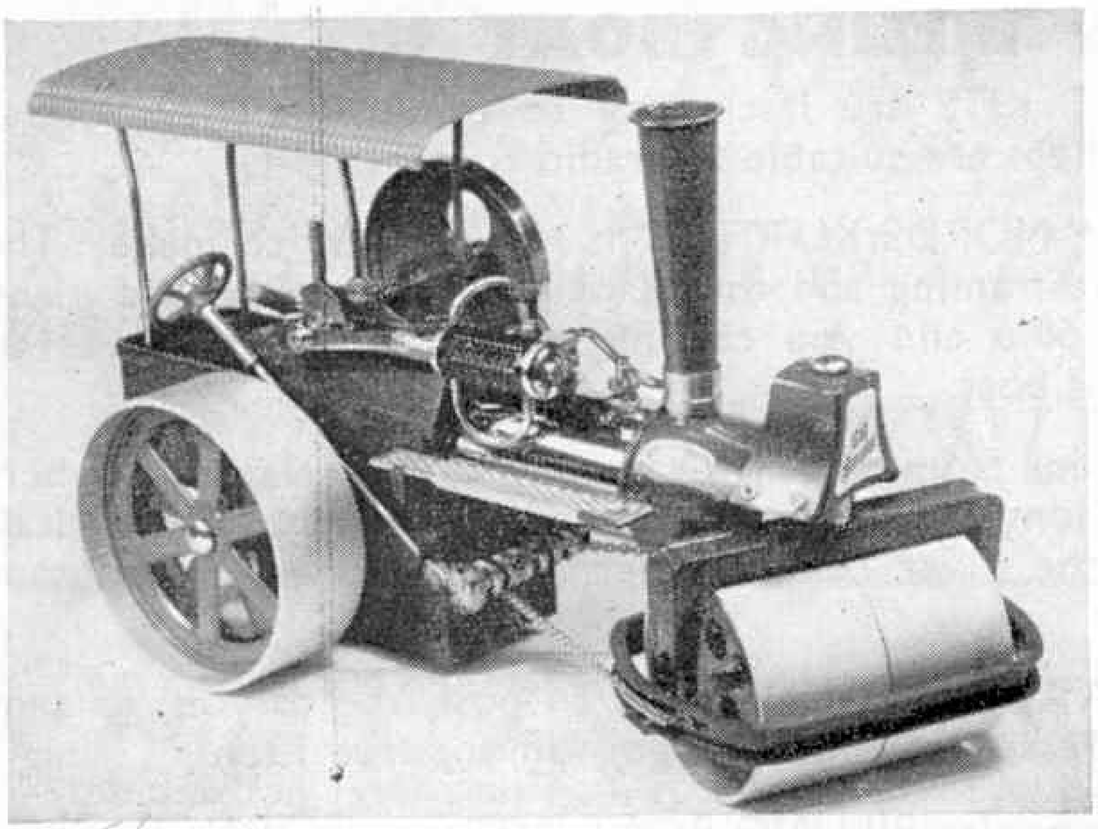
Many years ago I wrote a note with a similar heading about the attractive "TT" gauge. I was nearly lynched by "TT" fans! But the question is interesting because the advent of Lima and Playcraft miniature sets at low prices must spread the gauge beyond the few grown up modellers who have found its small size so attractive. Personally, I am fascinated by "N" gauge and have been amazed at the reliability of MINITRIX locos which we have run for long periods but I do not think it is the size for junior. Time will tell.

WE HAVE A NEW "N" GAUGE BROAD SHEET

BEATTIES OF LONDON – TRAINS – CARS – BOATS – & MECCANO

KINDLY MENTION "MECCANO MAGAZINE" WHEN REPLYING TO ADVERTISEMENTS

BEATTIES OF LONDON — WORLD-WIDE MAIL ORDER SERVICE



"OLD SMOKY" by Willesco
The working model of the year. Burns solid fuel.
£13.10.0 post 5/-.

FOR LIVE STEAM FANS OF ALL AGES

It is unfortunate that there are no more "live steam" locos in production but we can provide Steam Engines by Mamod, Willesco and Fleischmann.

MAMOD STEAM TRACTION ENGINE	**113/3**
STEAM ROLLER	**99/9**
STATIONARY ENGINE SE1	**56/3**
SE3	**108/3**
MARINE ENGINES ME1 or 3	**56/3**
LINESHAFT & MACHINES, 5 pieces to work	**56/-**

MAMOD STEAM ENGINES ARE AVAILABLE AT ALL BEATTIE SHOPS

FLEISCHMANN STEAM ENGINES are shown in the catalogue, price **3/6** post free. Samples available at Holborn and can be supplied to special order.

MINITANKS STOCKED

In response to many requests we have put in a stock of the whole range at all shops and for mail order. Those interested in these fascinating miniatures which go so well with "BATTLE-SPACE" should send for our illustrated list and order form. We can normally supply by return of post.

REVELL KITS

We stock the full range of Revell Kits and car sets at all shops.

AIRFIX KITS

All AIRFIX Hobby Kits are stocked at Southgate, Holborn and Manchester and we give a "by return" mail order service from Southgate. Have you made the first two of the working MUSEUM MODEL series? BEAM ENGINE **11/6** and TREVETHICK'S LOCO ... **11/6** post 1/6 each, the 2 post free.

MECCANO PARTS SERVICE

The full range of MECCANO sets and SPARE PARTS are available at our shops. At Southgate and Holborn you can select what you want off our "self selection" boards. This is real service and we do keep our stocks up. Try us by post.

SEE THE WORKING "ROBOT" AT HOLBORN

FALLER & KIBRI KITS

House building is a fascinating pastime. Faller & Kibri offer a wide range of easy-to-build kits. See them at our shops or send a stamped envelope for lists.

You don't have to have a railway or a racing layout to build houses—make a model village.

LONE STAR NEWS

ALL Beattie shops stock Lone Star electric and it is available by post from Southgate. We still have some of the push-along items at Southgate.

TRI-ANG POWER UNITS

We can recommend the new Tri-ang Power Units. They are ideal for shunting and the makers claim that the switch-reverse will not damage motors. See them at our shops.

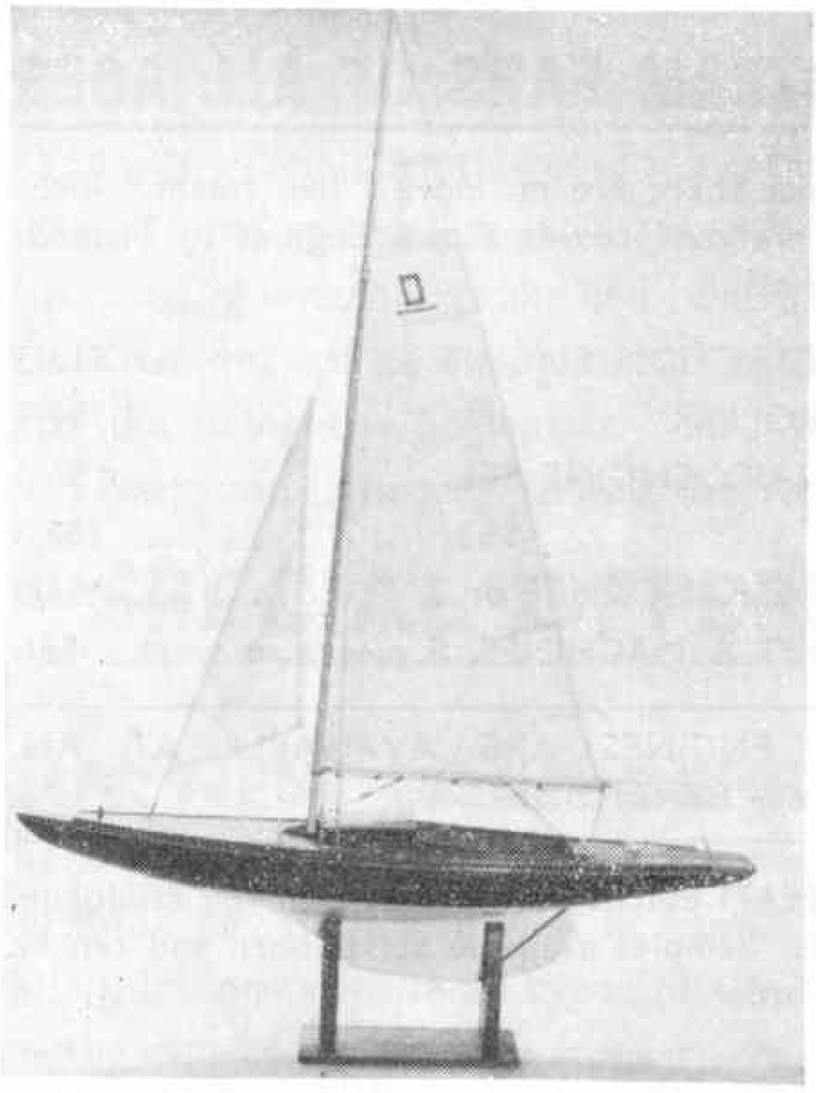
BARCLAY	**59/6**
WESTMINSTER	**47/6**

SECONDHAND SERVICE

We can only deal with secondhand enquiries at our Secondhand shops at Southgate and Holborn. It is not practical to give information about secondhand goods by telephone or post. It is for personal shoppers only.

BEATTIE SHOPS ARE AT HOLBORN, SOUTHGATE & MANCHESTER

BEATTIES of LONDON—7 WONDERFUL SHOPS & WORLD WIDE MAIL ORDER



BUILD A BILLING BOAT KIT

BILLING BOAT KITS are fascinating to make and they will all sail—most of them are suitable for radio control.

Start with the " NORDS KUTTER," it is quite easy to make. The kit contains the framing and the planking and easy to read plans. The kit costs **60/6** and you can buy a set of fittings made up specially for this boat.

Billing Boats come from Ejsberg in Denmark, from the place where they built the long boats which ravished the east coast of Britain and sailed up the River Lea into Hertfordshire nearly a thousand years ago.

BEATTIES BOAT CATALOGUE costs **2/-** post free or you can send a stamped addressed envelope (large) for our free lists.

These are the popular BILLING BOAT KITS.

NORDS KUTTER ...	**60/6**	ZWARTE ZEE	**101/6**
MERCANTIC	**106/6**	PROGRESS	**97/-**
WASA	**80/3**	NEW YACHT ... ... *(illustrated)*	**67/6**

IF YOU ARE INTERESTED IN BUILDING FINE KITS IN THE OLD MANNER—
YOU MUST SEND FOR THE BEATTIE BOAT CATALOGUE

STOP PRESS—WE HAVE 3 STANDS AT MODEL ENGINEER EXHIBITION

BEATTIES PART-EXCHANGE PLAN

For fifteen years we have been helping modellers in Britain to change their unwanted items for goods they really need. Normally we operate on a minimum 50/50 basis, you must match our allowance with at least the same amount in cash but we do do straight exchanges if we really want the goods.

We take modern trains and track, good rolling stock and locomotives. We make a small allowance for 3-rail systems like Hornby-Dublo and Marklin. We do not take worn out or damaged goods. We accept Dinkys, Corgis, etc., and the brassware of Meccano. We buy what we need for cash but exchange is the basis of our business and we will send you a leaflet on " BEATTIES EXCHANGE " if you send us a stamped envelope.

WE SPECIALISE IN CHANGING ORDINARY TRACKS TO PECO, FORMOWAY & GEM TRACKWORK.
We deal by post and at all our shops.

SEND A LARGE (foolscap) ENVELOPE FOR OUR FREE LISTS

BEATTIES OF LONDON

15 THE BROADWAY, SOUTHGATE, LONDON N.14
112 HIGH HOLBORN, LONDON W.C.1
28 CORPORATION STREET, MANCHESTER 4

(ALL SHOPS OPEN 9 TO 6 EVERY SATURDAY)

KINDLY MENTION "MECCANO MAGAZINE" WHEN REPLYING TO ADVERTISEMENTS

IMPORTANT ANNOUNCEMENT. . . .

Make Your Hobby Pay

. . . . OPPORTUNITIES FOR MECCANO MODEL CONSTRUCTORS

WHEN IT was announced earlier this year that the *Meccano Magazine* was to cease publication, Meccano Ltd. received a great number of letters from enthusiasts all over the world expressing sympathy and dismay and detailing their long associations with the Meccano system. These letters confirmed what we at Meccano had known all along—that there were literally thousands of "unknown" model-builders working quietly away at the hobby without any desire for publicity—but they further served to emphasise that some form of official publication for the hobby was still as necessary as ever. The result, as you can see, has been the resurrection of the *Meccano Magazine*.

This in itself is something well on the way to being unique. It is not unusual for a magazine to cease publication, but it is certainly most unusual for a discontinued magazine to start up again! Now that the M.M. has reappeared, we trust that you will continue to give us your support. In fact, the life of the magazine *depends* on your support—particularly the Meccano model-building section—and so we are hoping that Meccano modellers everywhere will regard the magazine as an outlet for their ideas as well as their mechanisms and models. In short, we invite you to submit for publication anything you have built, no matter how simple, that you feel may be of interest to other readers. We are not, however, asking you to supply material free of charge, we will pay realistic fees for anything used.

Ideally, submissions should be in finished article form, i.e. complete written building instructions plus large black and white photographs including *two* prints of each view, only *one* of which should be key numbered to tie-up with the text. We realise, however, that this may not be possible in many cases and so, when necessary, we would have the model photographed if you sent it to us accompanied by the written instructions for building it. Finally, if you were unable to supply either photographs or instructions we would be prepared not only to photograph the model, but also to write the instructions ourselves, always assuming that the model was acceptable.

It is important to remember that Meccano models are liable to damage in the post and so, for this reason, we would prefer to receive good photographs rather than the actual model. If you do send the model, however, we advise you to have it suitably insured as we cannot accept responsibility for damage in transit.

In all cases, of course, the publication fee would depend upon the quality of the model itself as well as on the amount of work involved in turning the instructions into a finished article.

Remember also that mechanisms are just as acceptable as models for the "Among the Model-builders" section, which we hope to reintroduce next month, and even general photographs of yourself with a model you have built could be usable, for publication in *Meccano Magazine*.

All submissions should be sent to our Northern Office:

MECCANO MAGAZINE, Binns Road, Liverpool, 13.

SUPER STEAM CAR

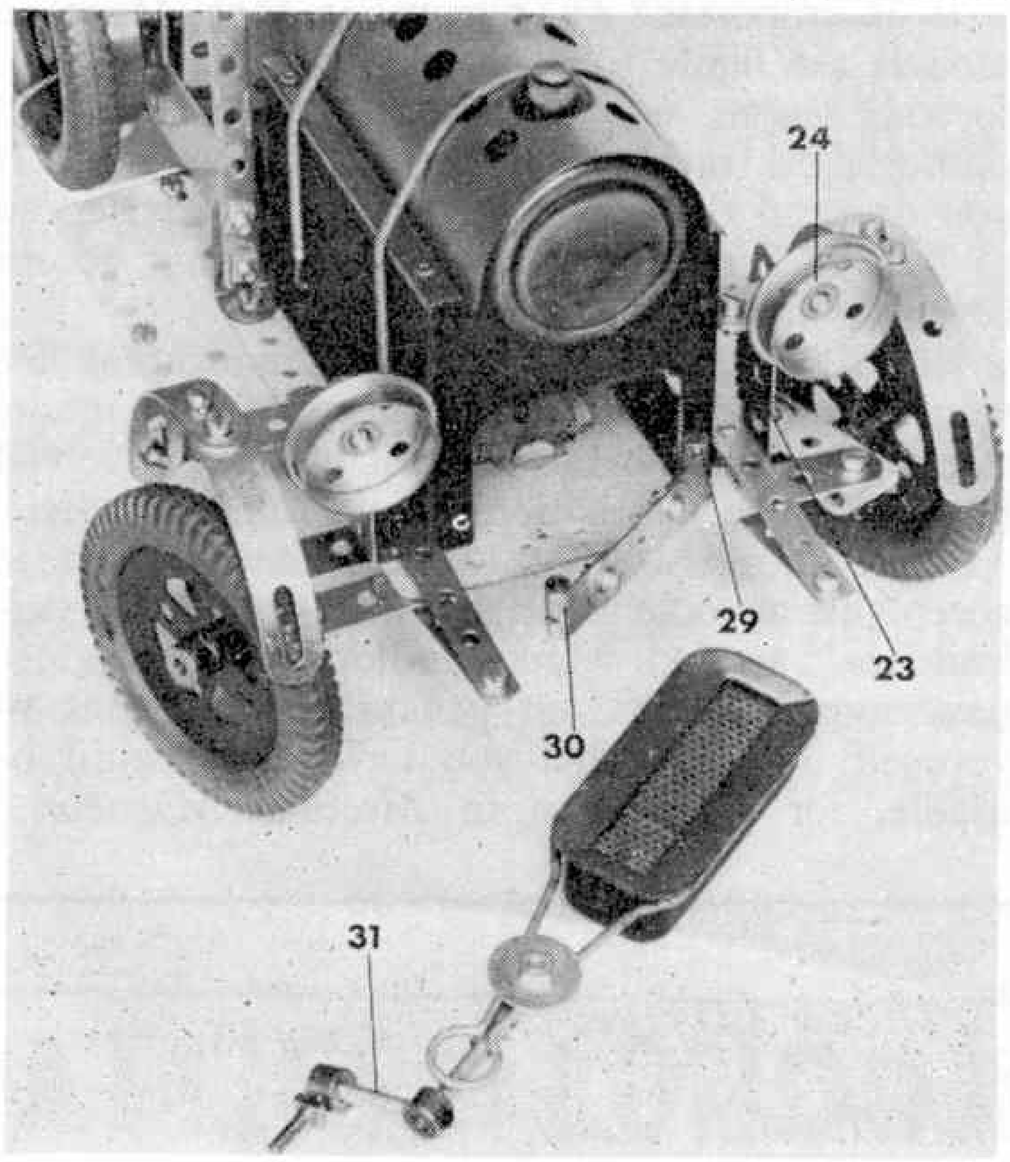
A model for the new Meccano Steam Engine

by Spanner

When we were in Liverpool last we saw that poor Spanner had plaster on most of his fingers! That was the price of development of this really super steam car. It was hard to shut up and go home and, together with Doug McHard, we spent a lot of time we should not have done sitting on the floor playing with it. We hope some of you, too, will enjoy it as much as we did!

ONE OF the lesser-known new additions to the Meccano system is the Meccano Steam Engine—a genuine "live steam" unit heated by a methylated spirit burner. *Meccano Magazine* has never featured this unit editorially in the past and, to be quite honest, I have only recently begun to experiment with it myself. Already, however, I can claim it to be highly successful and with sufficient power to operate most models, provided a suitable reduction ratio gear is fitted. It must, of course, be treated with great respect because it *is* a real steam engine and, as such, gets far too hot to touch, but it is perfectly safe so long as the instructions are carefully followed and you make it a rule never to touch the body or boiler of the engine when in operation.

For our first steam-powered project in this new M.M., I have chosen a "freelance" model, roughly based on an old steam car—surely the ideal subject for the Meccano Steam Engine! It is, incidentally, a modified version of a prototype model designed and built by Mr. Louis Hertz of Scarsdale, New York, U.S.A.



A close up view of the front of the model with the methylated spirit burner removed.

The beauty of the particular model illustrated lies in the fact that the major part of the chassis is provided by the baseplate of the Steam Engine, thus leaving comparatively few other essential sections to be added. In fact, although we included considerable embellishment to improve appearances, all that really needs to be added to give a working model are wheels and a reduction drive system—nothing to it! In our model, however, the Engine base is extended rearwards at each side by a 4½ in. Angle Girder 1, a 2½ × 1½ in. Flexible Plate 2 and a 2½ × 2½ in. Flexible Plate 3. A 3 in. Angle Girder 4 is then bolted to the lower flange of Angle Girder 1, to provide bearings for a 3 in. Rod that carries a 1½ in. Sprocket Wheel 5 and a ½ in. Pinion 6. Sprocket Wheel 5 is connected by Chain to a ¾ in. Sprocket Wheel mounted on another 3 in. Rod 7, held by Collars in the Engine side plates. Also mounted on this Rod is a 57-teeth Gear that meshes with the ½ in. Pinion on the Engine drive shaft.

Fixed between the Engine side plates are two 2½ × 1½ in. Flanged Plates 8 and 9, the latter attached by Fishplates and the former with a 2½ × 1½ in. Flexible Plate attached to it by Angle Brackets. Another 2½ × 1½ in. Flanged Plate 10 is bolted between Flexible Plates 3 as also is a 2½ × ½ in. Double Angle Strip to which a shaped 2½ × 2½ in. Flexible Plate 11 is fixed. A further two 2½ × 1½ in. Double Angle Strips, to which a 2½ × 1½ in. Flexible Plate is secured, are bolted between Plates 2. Flanged Plate 20 is extended rearwards by a Semi-circular Plate 12, attached by Fishplates, then the back is completed by a 5½ × 1½ in. Flexible Plate 13. A rear lamp is provided by a ¾ in. Flanged Wheel 14, fixed to Plate 13 by an Obtuse Angle Bracket. A ½ in. loose Pulley is carried inside the Wheel.

At this stage, the wheels and axles can be fitted. Held by Collars in Angle Girders 4, at the rear, is a 6½ in. Rod carrying a 57-teeth Gear in mesh with Pinion 6. Two 2 in. Pulleys with Motor Tyres act as the rear road wheels. At the front, a 5½ in. Strip 15 is bolted to the Engine baseplate. Lock-nutted to the ends of

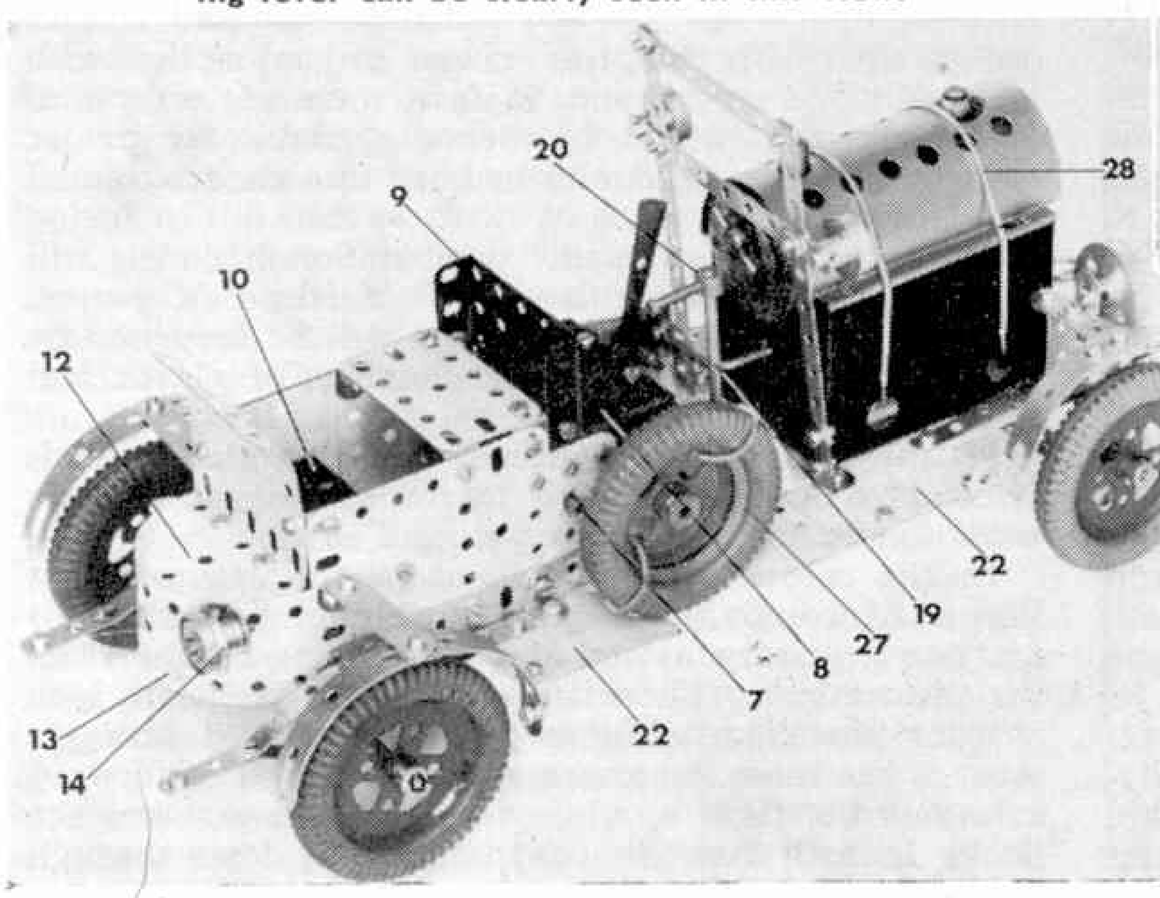
this Strip are two Trunnions, between which another $5\frac{1}{2}$ in. Strip 16 is lock-nutted. Yet another $5\frac{1}{2}$ in. Strip 17 is lock-nutted to this Strip and to a Crank 18 fixed on the end of the steering column—a 4 in. Rod 19, held by a Collar in the boss of another Crank, bolted to the Engine baseplate. A $\frac{3}{4}$ in. Bolt in a Collar 20 acts as the "steering handle." Two 2 in. Pulleys with Motor Tyres again provide the front wheels, being held by Collars on Threaded Pins, fixed in the Trunnions.

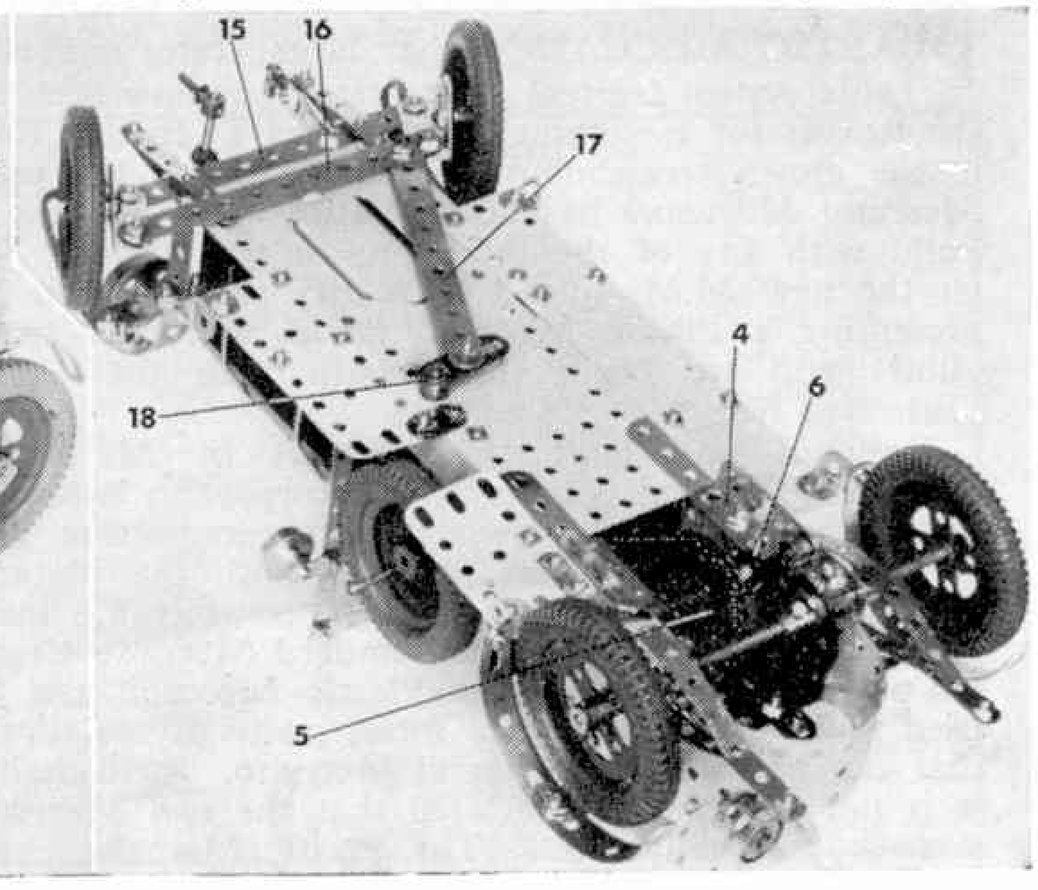
Running boards are built-up, on the nearside from two $5\frac{1}{2} \times 1\frac{1}{2}$ in. Flexible Plates 21, and on the off-side from three $2\frac{1}{2} \times 1\frac{1}{2}$ in. Flexible Plates 22. Note that, in the latter case, a gap is left beneath the flywheel of the Engine. Four mudguards are now each obtained from two Formed Slotted Strips and each is attached to the appropriate running board by a left-hand or a right-hand Corner Angle Bracket as the case may be. In addition, the rear mudguards are fixed to the body sides by 2 in. Strips and Angle Brackets, while the front mudguards are fixed to the Engine baseplate by 2 in. Strips and $1\frac{1}{2} \times \frac{1}{2}$ in. Double Angle Strips 23. Secured to each of the latter 2 in. Strips by an Angle Bracket is a $1\frac{1}{8}$ in. Flanged Wheel 24 representing a headlamp.

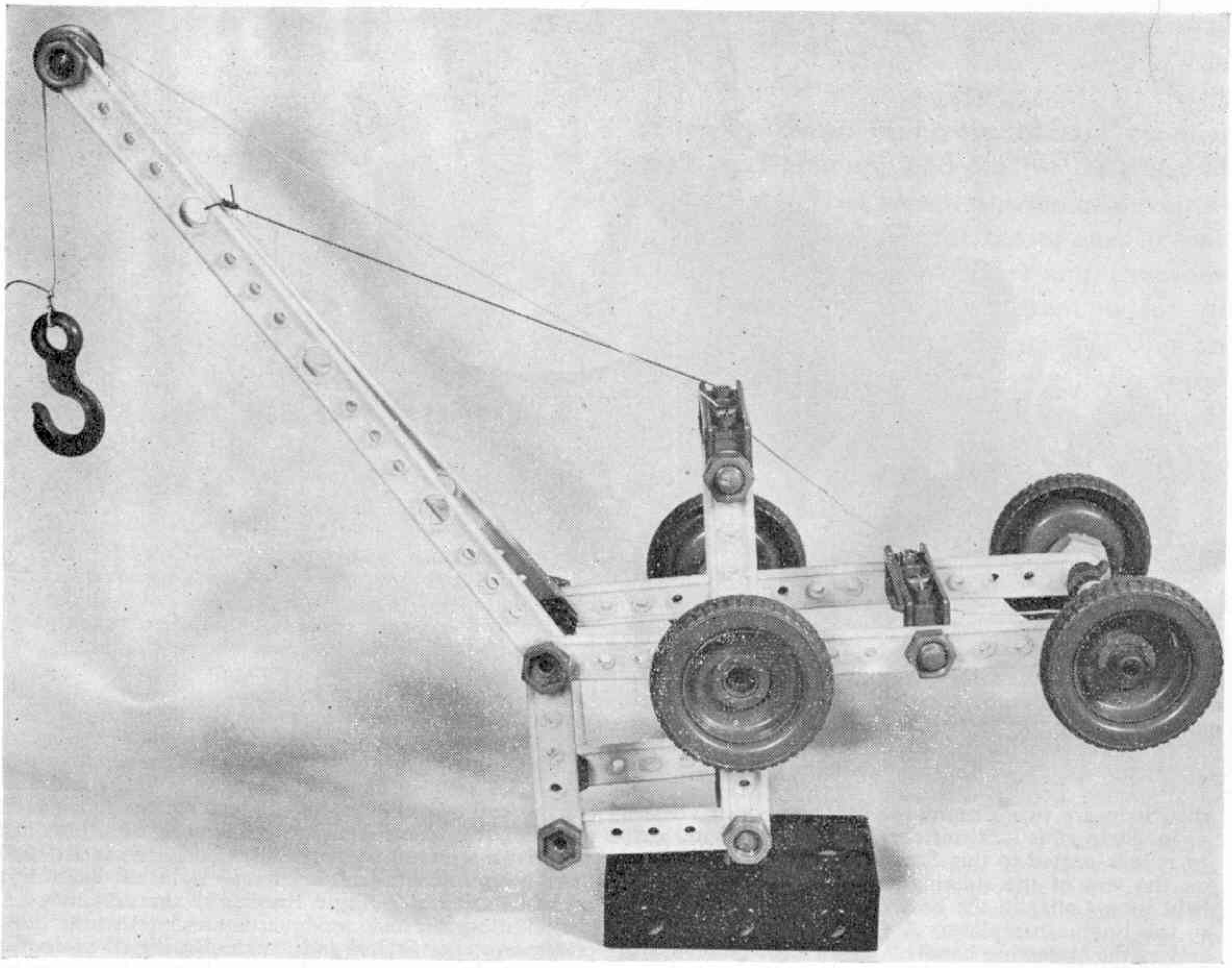
Continued on page 37

The flywheel, disguised as a spare wheel, and the engine reversing lever can be clearly seen in this view.

An underneath view of the Steam Car showing the drive and steering arrangements. Note the basic simplicity.







Plastic Meccano—A Crane to Start With

by Spanner

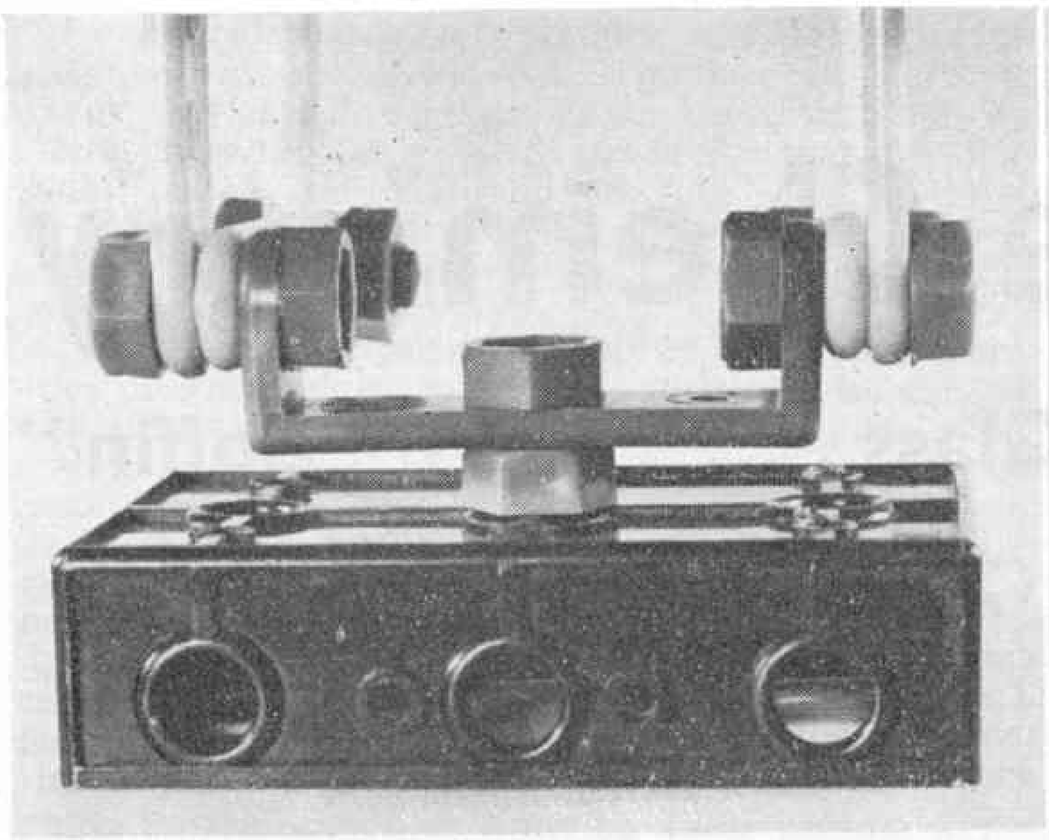
PLASTIC MECCANO—that large scale, unbreakable system for real youngsters—has now been on the market for something like two years. In that time it has grown tremendously popular, but in the past, *Meccano Magazine* has never featured new models to build with any of the three sets in the system. We on the new M.M. intend to rectify the situation by presenting a Plastic Meccano model whenever space allows and we begin this month with the Crane illustrated here.

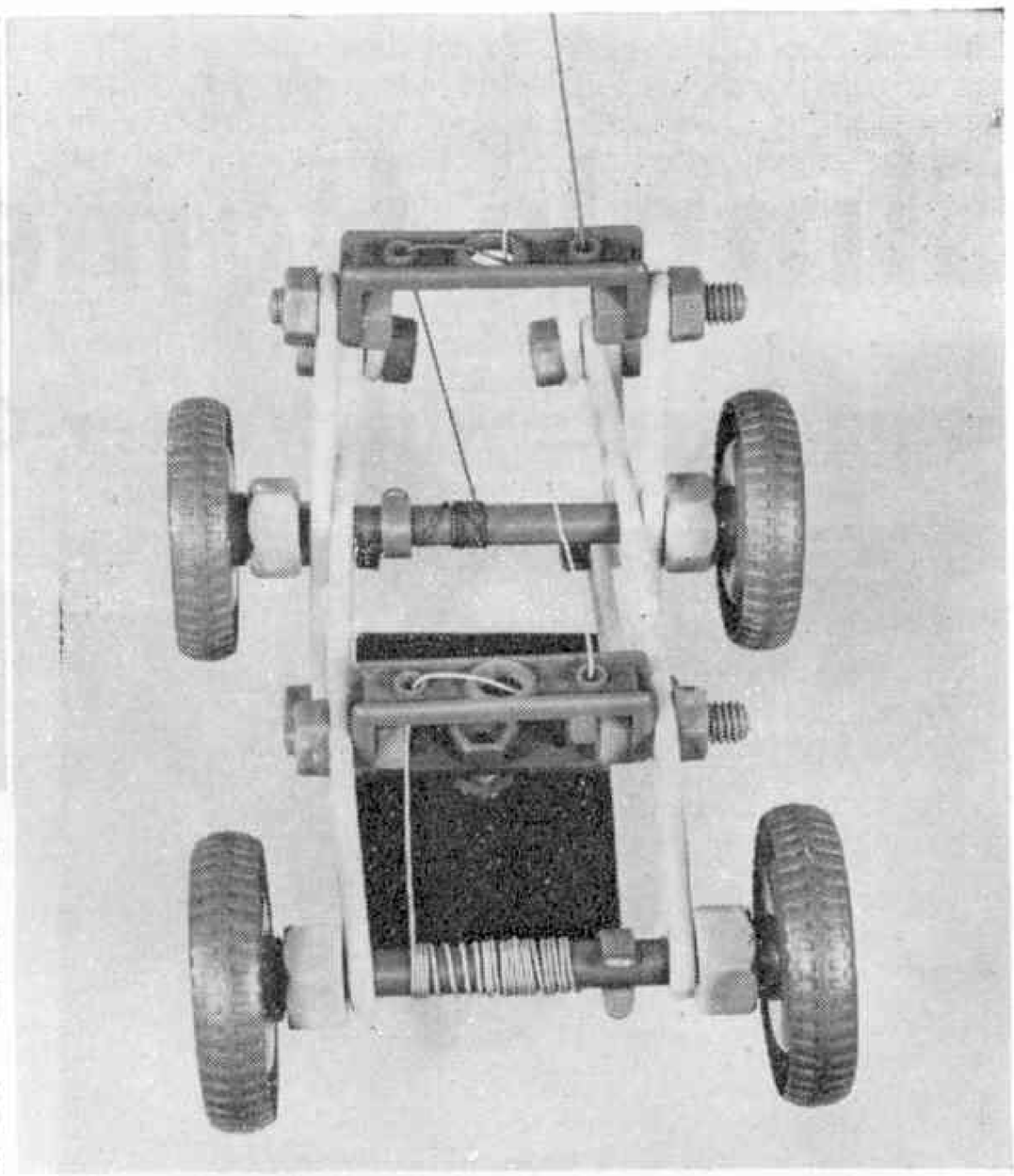
Designed and built from Set A by Mr Colin Hughes of Neston, Cheshire, it incorporates two very interesting features—a swivelling superstructure and a cord arrangement that prevents both the jib and hook from slipping, even under a considerable load. Also, when compared to the standard Meccano Crane on page 24, it proves that Plastic Meccano can be used to build, in a simpler form, many of the things that can be modelled in metal Meccano. Incidentally, it is not generally appreciated that the two Meccano systems are really one ! The Plastic Meccano parts can be used with complete success in conjunction with the traditional metal, and, in fact, there are several of the plastic parts which, by their use, enable far greater realism and more colour to be built into the traditional metal model.

Some examples of such " combination " models will be presented in future issues of *Meccano Magazine*, and we are sure that many of you will be surprised by the impressive effects that the marriage of plastic and metal can produce.

If any readers have already experimented in this direction we would be most interested to hear of their work—more details on page 33.

In the case of this model, as in the case of most Plastic Meccano items, complete building instructions are not necessary as its construction is obvious from the illustrations. There are one or two points to look out for particularly, however, and the cord arrangement is the most important one of these. The forward axle controls the jib, while the rear axle actuates the hook. In both cases the cord is threaded down through





The completed Crane in heading photo opposite illustrates the simplicity of this Plastic Meccano, Set A, model.

Above: The connection between the Crane body and the base.

Right: A rear view of the Crane body showing the method of threading the operating cords through the Double Angle Strips.

the right-hand small hole in the face of the appropriate Double Angle Strip, is brought up through the centre large hole and down through the left-hand small hole to be finally attached to the axle.

This method provides sufficient friction to prevent the jib and load from slipping. Remember, incidentally, that the Bolts anchoring the arms of the jib to the superstructure must not prevent the jib from moving freely. On the subject of the superstructure, this is attached to the base by holding it loosely on a Bolt with a Nut, the Bolt then being screwed tightly into the centre hole of a Base.

PARTS REQUIRED

4—2-hole Strips	12—Nuts
2—3-hole Strips	3—Double Angle Strips
2—4-hole Strips	4—Road Wheels
2—5-hole Strips	1—Pulley Wheel
1—Base	2—Axle Clips
10—Bolts	1—Hook
2—1 in Bolts	2—4½ in Axles

Super Steam Car

(Continued from page 35)

Four sets of imitation springs are now constructed, those at the front from 4½ in. Narrow Strips, and those at the rear from 5½ in. Narrow Strips, all curved to shape as shown. The front springs are bolted to the Engine baseplate and the rear springs to the running boards. A further two 5½ in. Narrow Strips, joined by a 3½ in. Narrow Strip 25 and a 4½ in. Narrow Strip 26, are attached to the baseplate by 1 × ½ in. Angle Brackets to act as a windscreen. Small Flanged Wheels bolted to the ends of Strip 26 serve as sidelamps.

A 2 in. Motor Tyre 27 is fixed on the Engine flywheel by two short lengths of Spring Cord to represent a spare wheel, at the same time adding extra weight. A Hook for Spring Cord (Part No. 58b) is screwed into each end of each length of Spring Cord to enable the ends to be joined. Further Hooks are added to the ends of longer lengths of Spring Cord 28 which are then fixed over the Engine boiler, as shown, to represent bonnet straps.

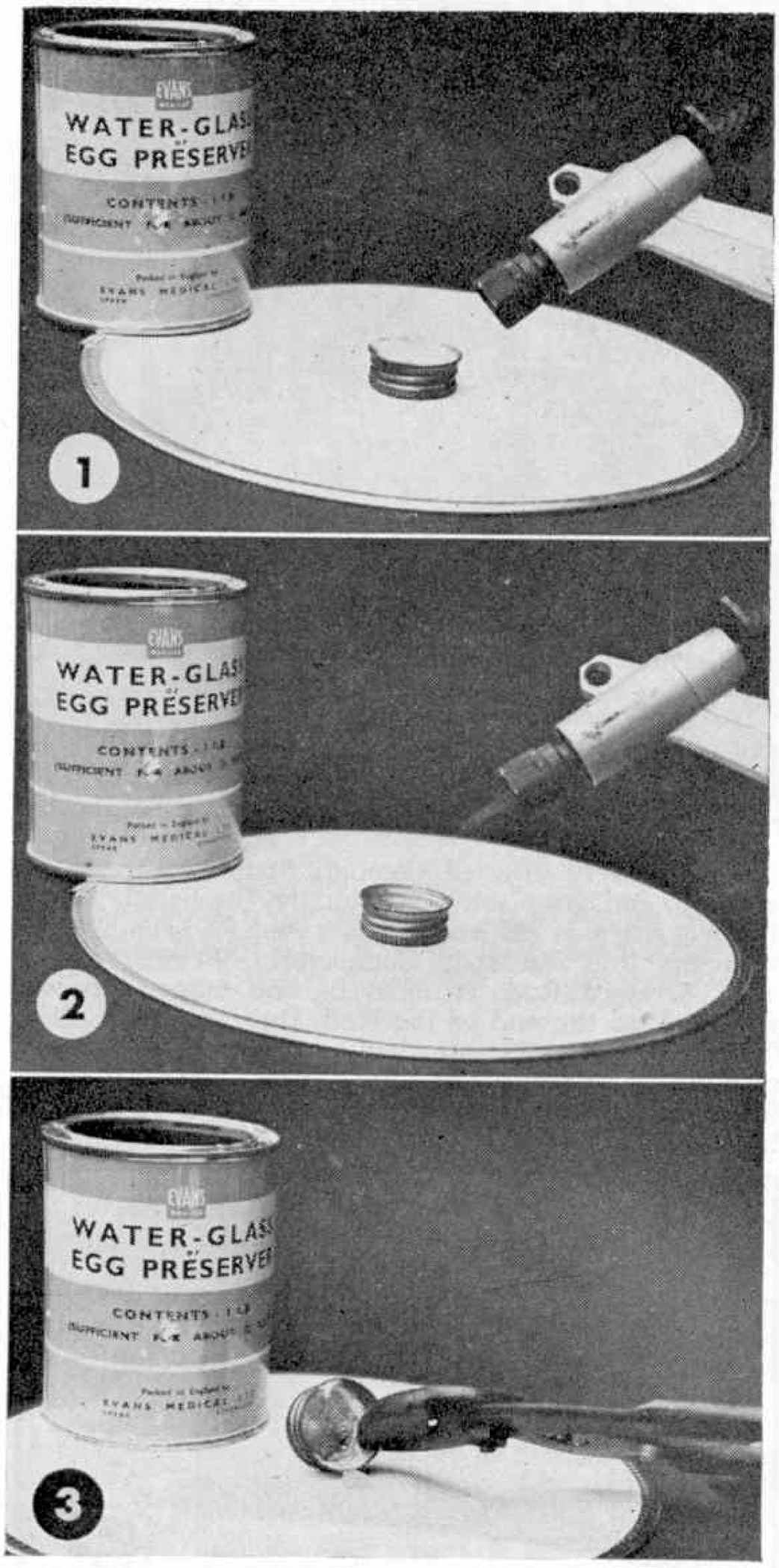
Finally, a ¾ in. Bolt 29, carrying a right-angled Rod and Strip Connector, is held by Nuts in the front end of the baseplate. Bolted to this Strip Connector is a 1½ in. Strip to the opposite end of which another right-angled Rod and Strip Connector 30 is fixed. This arrangement provides a trap to hold the meths. burner in place and is held closed by another ⅜ in. Bolt which can be loosely inserted through Strip Connector 30 and into the baseplate. Incidentally, the handle of the burner, itself, is extended by a 1½ in. Rod, held in an Ordinary Rod and Strip Connector. A Collar with a 1 in. Screwed Rod 31 fixed in one tapped bore is mounted on the end of the Rod, then another Collar, with a Threaded Pin attached, is mounted on the end of Screwed Rod 31. The arrangement, besides increasing safety, also provides a good imitation of a crank handle.

Parts Required

3— 2	2— 27a	3—115
4— 6	113— 37a	2—126
2— 9a	99— 37b	5—142a
2— 9c	2— 38	2—154a
5—10	1— 38d	2—154b
10—12	2— 48	6—188
2—12b	3— 48a	3—189
1—12c	3— 51	3—190
1—14	1— 58	1—212
1—15b	8— 58b	1—214
2—16b	10— 59	8—215
1—18a	2— 62	2—235a
2—20	1— 94	1—235b
4—20a	1— 95a	3—135d
3—20b	1— 96a	6—235f
2—23	4—111	1 Meccano Steam Engine
1—26	6—111c	

Simple Home Chemistry

Experiments with Water-Glass . . . . . by " Boffin "



The glass-making experiment was conducted with a Ronson Butane Blow Torch and Evans Water-Glass, Egg Preservative. Note the asbestos mat to prevent the heat burning the working surface. Stage 1: the waterglass being heated and frothing up. Stage 2: the waterglass now heated and molten. Stage 3: molten glass being poured on to the asbestos mat to cool and solidify.

GLASS IS made from silica melted with sodium carbonate and lime—all very ordinary and common chemicals, for silica is nothing more than white sand. To melt these ingredients, however, you need a higher temperature than you can conveniently provide at home and so glass making, this way, is not really a proposition.

You may, however, have better luck making a *lead* glass, which has a lower melting point. It is called " lead " glass because lead oxide is used instead of lime and the basic " mix " comprises equal parts of clean white sand, anhydrous sodium carbonate and yellow lead oxide.

Mix up a *small* quantity of these powders—say about as much as you can lift on a wooden spill in each case—in a crucible (or if you want to save buying special apparatus you can use a metal screw cap off a bottle). You need a blowlamp flame to provide enough heat, using either a Bunsen burner and a blowpipe, or one of the neat little butane blowlamps sold by do-it-yourself shops. Play the flame strongly on the mixture until it melts into a fluid mass. Then lift the container up with tongs or pliers and pour out the contents on to an asbestos mat. It should cool into a sparkling piece of genuine glass.

There is an easier way of making glass which requires rather less heat for satisfactory results. This time we start with *water-glass*, which is a syrupy solution of sodium silicate sold for preserving eggs—and quite inexpensive. Our glass-making project is then divided into two stages.

Stage 1. Put three or four drops of water glass in the bottom of the crucible or small tin lid and heat strongly with the blowlamp. The water glass will sizzle and crackle and swell up into a white puffy mass as the water is evaporated from the solution. When no further change occurs—i.e. all the water has been driven off—allow to cool.

Stage 2. Scrape out the hard white substance produced at stage 1 and grind into a fine powder. Mix this with about *one quarter* the amount of ordinary powdered chalk and put back into the container (which should have been thoroughly cleaned out first). Now heat again with the blowlamp and in a very short time the mixture should melt into a clear liquid. Pour out on to an asbestos mat to cool. Once again you have succeeded in making genuine clear glass!

Having found out how to make glass, there is no need to stop there. We can easily make coloured glass, and with a little practice pour out the molten glass into drops which will solidify into attractive bead shapes.

To make coloured glass you need just a trace of a metallic compound added to the basic mixture of the powder obtained from stage 1, plus the chalk added for stage 2. Here are some chemicals you can try and the colours they give—but remember only a tiny trace of chemical should be added.

Ferrous sulphate—will produce a yellowish green glass; *manganese dioxide*—will produce an amethyst colour, but if you add too much the colour will be black; *copper sulphate*—will produce a greenish blue glass; *cobalt chloride*—will produce a blue glass; *chromium oxide*—will produce a green glass; *carbon* (e.g. some scrapings from a pencil lead)—should produce an amber coloured glass.

Now all these experiments only require small quantities of water glass, so let's see what else we can do with this sticky substance—beside preserve eggs! For a start it is not a bad cement for sticking glass or ceramic tiles, although for a good joint you need to clamp the parts together quite tightly until the water glass has dried out. Water glass is also the basis of a good cement which is heat- and acid-resistant. The "formula" in this case is two parts water glass mixed with one part of fine sand and one part of powdered asbestos.

You may have heard of silica-gel—the substance which is widely used as a drying agent because of its ability to absorb moisture? This you can make direct from water glass and the experiment is quite an interesting one.

For a start we need to dilute the ordinary water glass slightly. First put two spoonfuls of water into a suitable container, such as a beaker. Then take *one* spoonful of water glass and stir in until dissolved. It will help, incidentally, if the water is lukewarm to start with.

Now you need another solution which can be either

(i) a spoonful of sodium bisulphate crystals dissolved in two spoonfuls of water; or

(ii) diluted hydrochlorid acid (1:10 concentration). In this case you need two spoonfuls poured out ready in a separate container.

With the water glass solution in one container and either solution (i) or (ii) in another, *pour the two simultaneously* into a third container. Almost immediately the mixture will set into a jelly-like mass which is silica-gel (or, chemically, silic acid).

If you want to go one stage further you can turn water glass back into sand. Put some of the silica-gel you have prepared into a crucible and apply the blowlamp flame again until it has shrivelled and dried out completely into a white powder. This white powder will be pure silicon dioxide or common sand.

Making a chemical garden

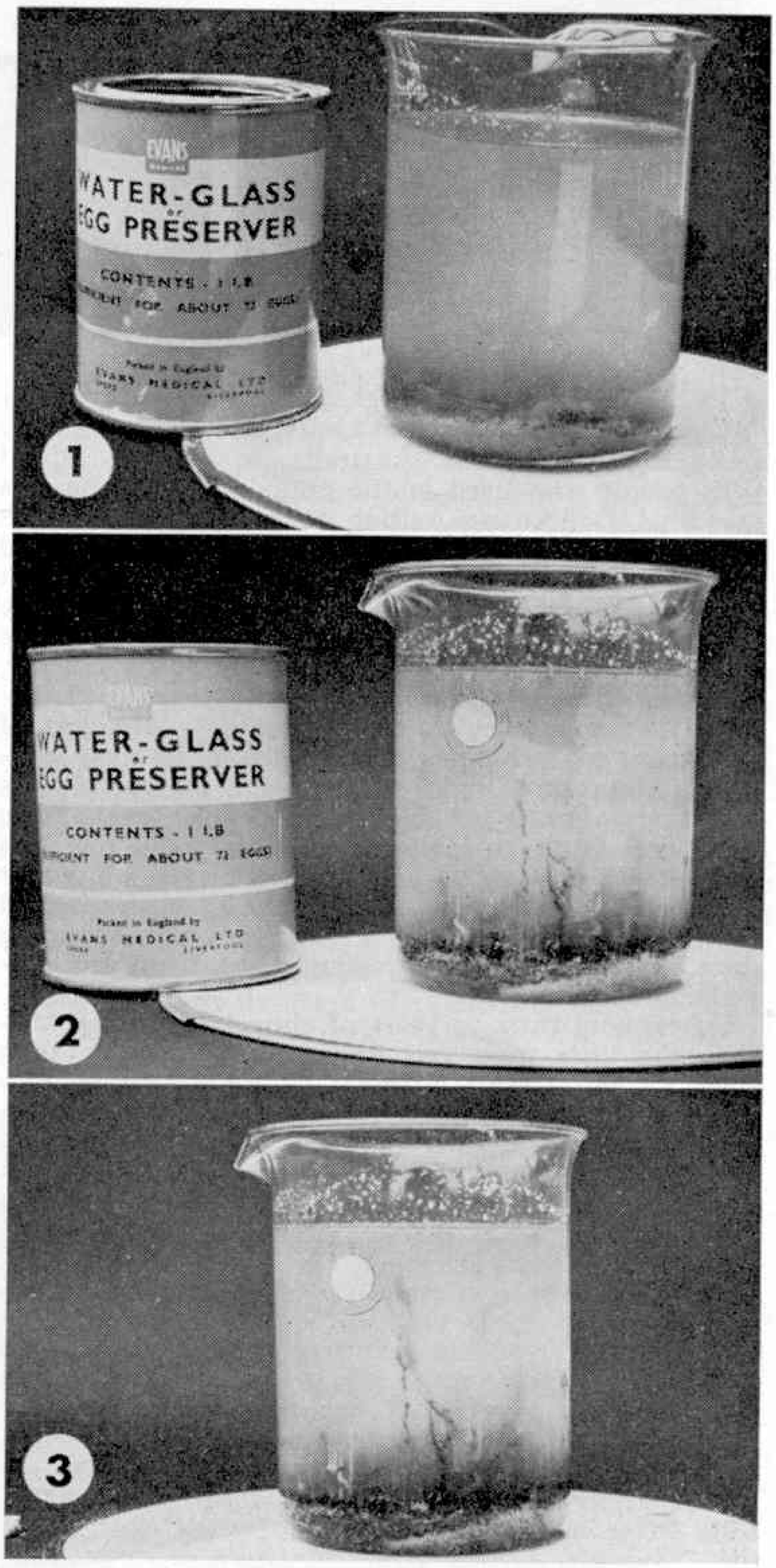
One final experiment we can try with our remaining water glass is to make a chemical garden. Once again we need a diluted solution of water glass, but in sufficient quantity to nearly fill a jam jar or a reasonably sized glass beaker—it must be a transparent container to see the chemical "growth" which develops. Work on the proportions of two tablespoons of water glass to a cupful of water—e.g. if it needs *three* cupfuls of water to three-quarter fill the container you need *six* tablespoons of water glass to match. Again, dissolving the water glass will be easier if you use lukewarm water; but if you do, let the solution cool down completely before adding the chemical "seeds."

These seeds are merely crystals of various chemicals dropped into the solution and allowed to sink to the bottom. Having planted a variety of "seeds" in this manner the container should then be placed in a position where it will not be disturbed and left to stand. In some cases growth will be rapid and extend right up to the top of the water glass. In other cases growth will be slower, but all likely growth should be complete within a few hours.

At this stage your chemical garden is complete and should stay like this. However, you may care to try the rather tricky business of syphoning off the water glass *very carefully* and then, equally carefully, refilling with fresh clean water.

Here is a list of "seeds" you can try planting in your chemical garden—all common readily available chemicals: alum, copper sulphate, ferrous sulphate, nickel sulphate, zinc sulphate, cobalt chloride, ferric chloride, manganese chloride.

For best results "plant" crystals of reasonably generous size—say at least $\frac{1}{8}$ in. nominal diameter.



The Chemical garden in the making; no heating is required for this experiment; just the actual chemicals you wish to plant and a glass beaker. Stage 1: the crystals planted at the bottom of the beaker. Stage 2: the chemical plants growth after a few minutes. Stage 3: the growth after 30 minutes. Fresh clean water can be added when growth is completed.

ON THE 18th of December, 1900, the very first train pulled out of Fern Tree Gully, a township some 20 miles from Melbourne, Australia, to link the capital with people who lived in the range of hills known as the Blue Dandenongs, rising to more than 2,000 ft above sea level and from where the aborigines had looked in amazement at the ships bringing in the first settlers many years earlier. The new railway service climbed slowly into these hills, calling at picturesque stations named Upwey, Tecoma, Belgrave, Selby, Menzies Creek, Clematis, Emerald, Nobelius, Lakeside, Cockatoo, Fielder, and Gembrook. Because of the quaint high-chimney engines, the locals soon nicknamed the train "Puffing Billy" and for many years the service linked the hills with electric trains from Fern Tree Gully to Melbourne. When the author was in Australia on loan to the RAAF he rented a house at Tecoma and made many trips on the little train which actually ran through his garden, the crew sounding their whistle in friendly greeting to warn off any animals.

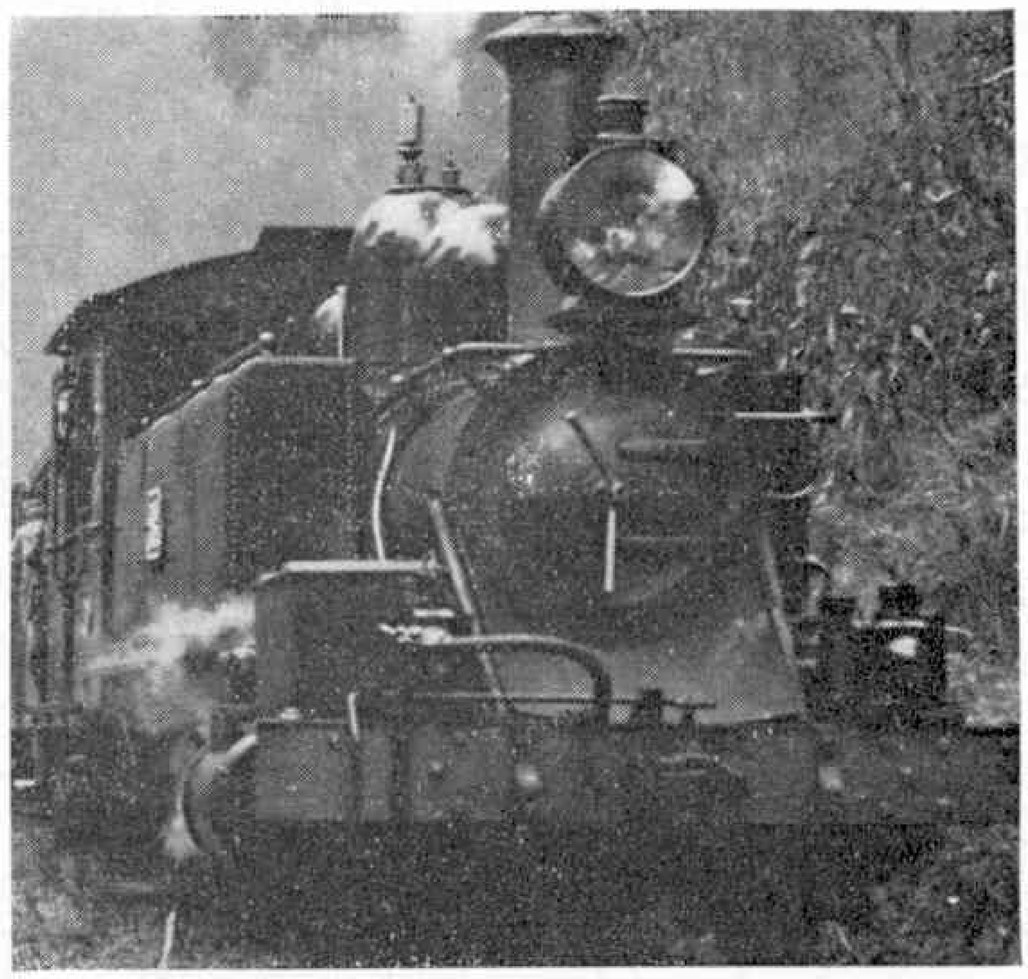
After more than 50 years of chugging through Victoria the little train was brought to a halt in 1953 when torrential rains caused a landslide between Belgrave and Menzies Creek. For two years no trains ran beyond Fern Tree Gully and the Chief Railways Commissioner announced that the line would be permanently closed and one of the two engines would be placed on exhibition in the National Park at "The Gully," on a short stretch of the 2 ft 6 inch narrow-gauge track. The Commissioner added that plans would now go ahead to build a full-size electric line into the hills, reducing "Puffing Billy's" time of 30 minutes to Belgrave to 10 minutes on the climb and 8 minutes on the descent. To his amazement there was an immediate storm of protest at the proposal to destroy the narrow-gauge railway and a Melbourne schoolmaster—Mr. H. L. Hewett—formed the Puffing Billy Preservation Society, backed by the publicity of the "Sun-Herald," a powerful newspaper. Railway enthusiasts—many of them emigrants, including Welshmen who missed the Snowdonia railways—joined to fight for the survival of "Billy" and at last the Victorian Railways gave in and agreed to run the little train between Fern Tree Gully and Belgrave only on public holidays, subject to support.

The cost of the double journey was £A25 (£A10 for fuel and £A15 for wages) and many prominent people donated £25 to pay for a trip for orphanages and other children. Then, in February, 1958, came an even greater blow—the Commissioner announced the start of electrification on that very section now allotted to "Billy" at holiday periods. Nothing daunted, the Society decided to try to reopen that section of the line blocked by the 1953 landslide (which the Commissioner said would cost £A10,000 to clear). Permission was granted for the Society to tackle the job and volunteers rushed to help, giving up weekends and vacations to work on the mighty task. Boy Scout troops and a Citizen Military Forces unit (similar to our Territorial Army) offered assistance, the part-time soldiers of No 3 Field Engineer Regiment building a new engine-shed at Belgrave, a coal-stage, ash pit and inspection area. Then they made a huge earth barrier at the crucial spot on the line, 350 yards of earth being man-handled, including a two-chain curve, to give a completely new stretch of track within the old threatened area. The other volunteers then laid the new track as the soldiers moved ahead and constructed a new terminus—at Lakeside.

Schoolboys (and some girls) hacked the undergrowth —much of it blackberry—to allow the soldiers and others to erect stands for two 1,000-gall water tanks (mainly rain-water, for there was no piped water, and if the tanks ran dry a nominal shilling was charged for the fire-brigade to refill, *plus £A9.15.0 for labour-costs*!!). That is why bush-fires are such a menace, since few have water to spare in the summer (November-April) and rely on their two or three tanks for every domestic need. Once the tanks were in position and filled, a passenger platform was constructed and a loop so the engine could change from one end of the train to the other for the return trip. Special certificates were printed and for a donation of two shillings you were informed that you had helped "Billy" nine inches towards Gembrook, the old terminus, which one day is the ambition of all enthusiasts to see reopened.

At last came the great day and the Governor of Victoria, Sir Rohan Delacombe, opened the extension from Menzies Creek to Emerald, two-and-a-half miles

An interesting 2' 6" narrow gauge railway from "Down Under" described by **Leslie Hunt**

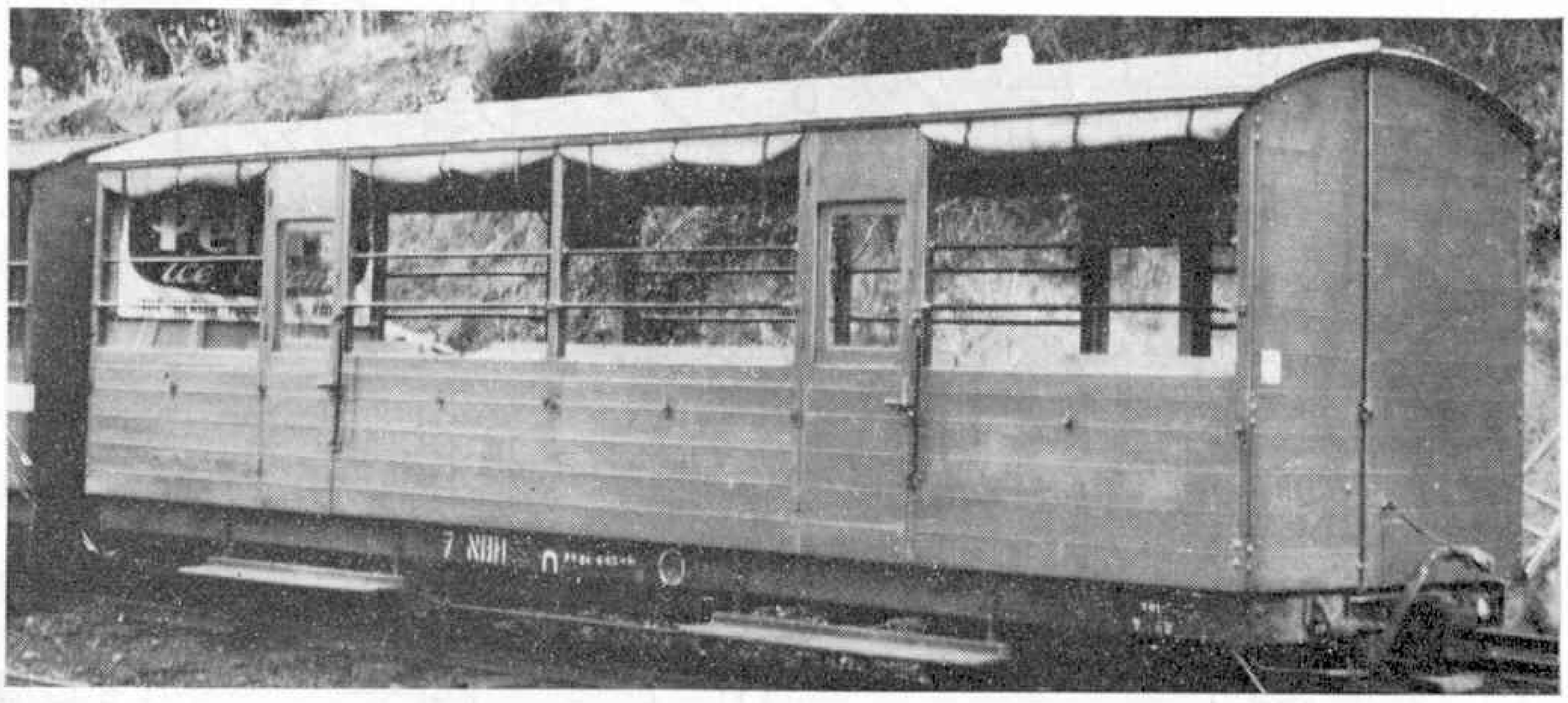


At left, Puffing Billy crossing Horseshoe Bridge at Selby with a full load of passengers. Right, Puffing Bill, a 2 ft. 6 in. gauge, side tank locomotive, sporting an acetylene headlamp. Below, the wooden coaches, with metal underframes, have roll blinds in the two-door passenger cars.

of track being used for the first time in twelve years when, in July, 1965, the Governor rode in a special coach for the round trip of 13 miles which was now possible. During the magnificent labours on the line by the hard-working volunteers, no fewer than 350,000 people had also helped, by travelling on the Belgrave-Menzies Creek section in the three seasons of the repair-work. Now, thanks to these splendid railway enthusiasts, thousands—perhaps millions—will enjoy the unique experience of a journey through the Dandenongs where—on the upward run, one can leave the cattle-box-like coaches to pick flowers, or photograph your friends hanging on to the footboards or—for privileged passengers—actually on the engine, a gesture reserved for those who have given practical help with coaling or watering.

It seems a long time since the author rode on "Billy" but he—and his sons, schoolboys then and now married—will never forget the thrills for, on every trip there was something to remember. Once the vigilant fireman spotted a car crash on the main road some distance away: "Billy" was halted and as the fireman sprinted across the fields to render first-aid, the driver shinned up the next telegraph pole and informed the nearest station to alert the police and hospital. On another of our journeys a dog, alas, was killed—the only fatality in all the years of the little trains. The train stopped and, using their shovels, the crew buried the animal by the side of the line, amid a profusion of glorious wild-flowers.

One day—in 1906—there was nearly a bad accident when, rounding a bend near Selby's horseshoe bridge, Puffing Billy jumped off the track, trying to make up lost time and going just too fast. Luckily for all concerned the train leaned over *inwards*, ending up against the hillside—a few yards further and a sheer drop of 70 feet would have brought the coaches crashing close to the main road. Once, too, a car was speeding along trying to keep the train in view when, near Upwey, it skidded off the road and hurtled down the hill on to the track. As always, though "Billy" was preceded by a trolley which cleared dangerous objects—sometimes a huge lizard and a wombat sleeping in the sunshine—from the track. On this occasion the two men on the trolley cleverly managed to edge the car off the rails, after attending to the bruised and shaken motorist and his passenger. All in all the little narrow-gauge has seen its share of excitement and, we think, will long continue to delight all who visit this part of Australia.



Round off

1/16" washers to give engine off-set to right (Important)

Engine mount 1/4 ply

Off-set washers

Off-set rudder 1/4" to right

1/4"

Cut

Fin and rudder 1/8 sht.

Upper wing sheet lead wing tip weight (Starb'd wing tip)

LOOPILOU

Designed by Ray Malmstrom

Thin acetate sheet 2 off cabin windows

Several layers doped-on tissue

Tissue covering

Bell-crank 1/16 ply

Control rod

G. 2 off

F 2 off

Bell-crank mount 1/4 ply

Line guide Laminated 1/16 ply 1/4 sht.

Tailplane

Cement fillet

Control rod

Front

Wing section B

Use medium grade balsa for entire model.

Fly on 25-28' nylon thread lines

Plan of fuselage. Note taper

Fin

Tailplane

Slot for fin

Control rod 18 s.w.g.

Linen tape

Cut out

Fuselage sect.

B

Skid 18 s.w.g.

B

Leading edge

Tissue line

Lower wing C/L (A)

Lower wing

Cut out

E

E

Wing construction detail

Upper wing C/L (A)

F

G

Upper Wing

ings from 1/4 sht.

D

D

Model must balance on front lead-out wire

Lead out wires 20 s.w.g.

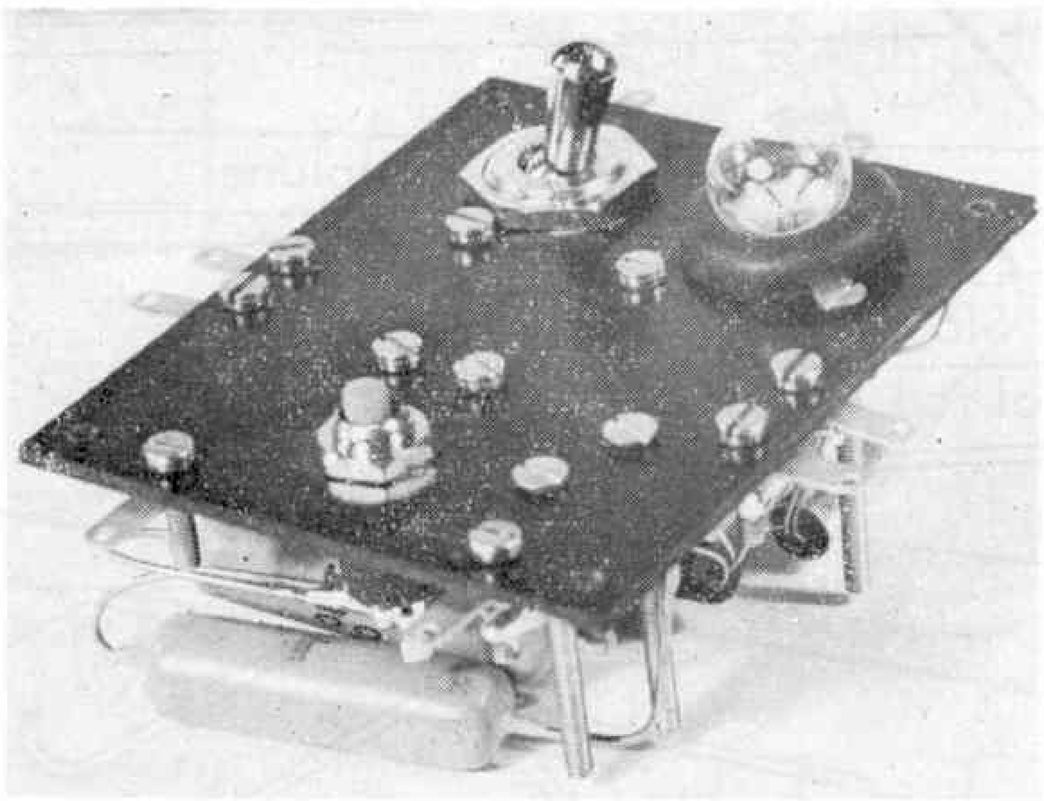
F

G

Sheet join

Tissue line

gned by Ray Malmstrom



THE MECCANO MAG COMPUTER

by Ron Warring

Components List

Resistor:

R1 1 kilohm
R2 4.7 kilohm
R3 220 kilohm
R4 1 kilohm
R5 4.7 kilohm
R6 220 kilohm
R7 2.2 kilohm
R8 6.8 kilohm
R9 2.2 kilohm

Capacitors:

C1 6.4 microfarad 25 v. working electrolytic
C2 6.4 microfarad 25 v. working electrolytic
C3 0.22 microfarad
C4 0.22 microfarad

Diodes:

D1, D2 and D3 Mullard OA85 (or OA81)
Transistors:
TR1 Mullard OC71 (or equivalent)
TR2 Mullard OC71 (or equivalent)
TR3 Mullard OC72 (or equivalent)
Bulb: B 6 volt 0.05 amp
Switches:
SW 1. Single pole toggle switch *biased to break* (or you can use a pushbutton switch)
SW 2. Two-way switch
Paxolin panel: size 2½ in. by 2 in.
Terminal tags:
8 straight
4 right-angled (" pillar " tags)
Bolts: three 8 BA approx. 1 in. long, with nuts
Eyelets (or rivets or 8 BA bolts) to mount tags—12 required
Insulated wire for connections: approximate 12 in.

All resistors ¼ watt 10 per cent. tolerance.

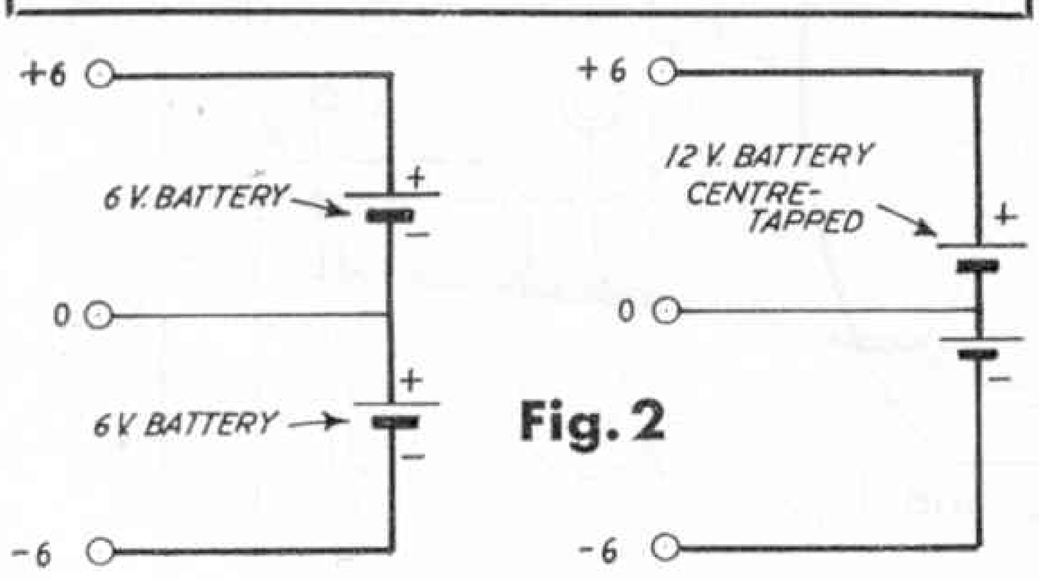


Fig. 2

THE VAST interest shown in the Meccano Mag. Computer published earlier in the year was tempered by the fact that the final description of getting the complete computer working was somewhat abbreviated when publication of the journal ceased temporaily in July. These notes are, therefore, intended to complete the picture. For new readers—and those who may have mislaid their original copies—we are also publishing the complete constructional details as a separate booklet and we are sure this will be in considerable demand, watch the electronics pages for release date!

Since all the relevant details, constructional diagrams, etc., are included in this booklet we will not repeat them here, other than the basic circuit diagram—Fig. 1. This was quite correct, as originally published, but you may care to check the components list again—noting particularly that transistor TR3 should be an OC.72 (or ACY.22, or other equivalent) in order to provide enough power to operate the 40 milliamp indicator lamp.

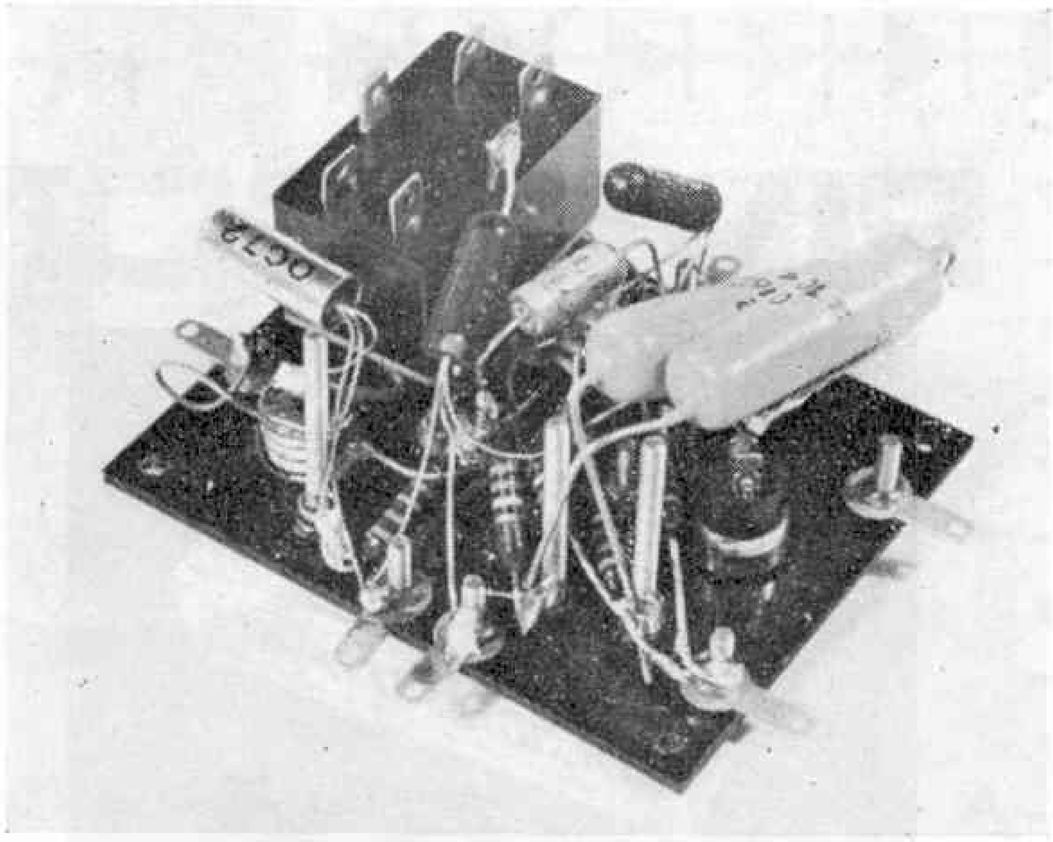
Assembly of the basic circuit is quite straightforward from the panel size and component layout drawings given (all included in the booklet), but there is one point where you need particular care. Capacitors C1 and C2 are both electrolytic (6.4 microfarad, 25 volt working) and you must connect these the right way round which is the *negative* side of these capacitors to the *collectors* on the respective transistors, as shown in the circuit diagram, Fig. 1, (opposite page).

Some builders also experienced trouble because the components are rather crowded when assembled on the design panel size, calling for careful work in the final stages of soldering components in position. This is not a difficult job, however, and the only real snag is that the " miniaturised " layout makes it awkward to check the final circuit component by component for correct assembly, or when tracing the circuit through to check for a fault. The cause of the latter will almost certainly be due to one of three things:

(i) A component wrongly connected into the circuit.
(ii) A wrong value used for a particular component (even experts make mistakes in reading resistor values from the colour code!).
(iii) A faulty component.

Faults (i) and (ii) are far more common than (iii). In fact, if you use new components, bought from a reliable source, cause (iii) is virtually ruled out—but not the possibility of having been supplied with a wrong *value* in error. Check everything before you start assembly; and then check again after completing the

A precise feature clarifying some points not dealt with fully by the previous Meccano Magazine



The module panel viewed from the back. As can be seen, the components are quite crowded, and beginners may like to double the panel size to give more room for soldering and circuit checking. The 8 B.A. bolts and terminal tags can be clearly seen.

circuit and before connecting up the battery supply.

If you prefer, there is no reason at all why you should not redesign the component layout on a slightly larger scale for easier working. For a beginner, in fact, we would suggest *doubling* the panel size and spacing out the component positions accordingly. This will give a lot more room for soldering individual components in place, and make it much easier to check the assembled circuit for correct connections. Remember that if you do increase the panel size of the basic unit, however, you will also have to increase the size of the frame on which these unit panels are assembled to build up the complete computer.

Now the point which caused most trouble with computer builders was the battery connections. If you look at the basic circuit diagram again you will see that there is a +6 volt and −6 volt connecting point, and also a connecting point marked "O." This does not mean that you use a single 6 volt battery connected between +6 and −6 as this would leave the "O" line open and the circuit also open. You need *two* 6 volt supplies, in fact, or a 12 volt battery which can be centre tapped. The *correct* way of connecting the supply to a basic unit for test, or the assembled stages, is shown in Fig. 2.

Dry batteries are quite all right for the supply, provided you do not have more than six stages in the computer. Even then the current drain will be fairly high, and battery life short as a consequence, since each stage can draw anything up to 60 milliamps, depending on whether the indicator bulb is alight or not. If the computer is to be used a lot, and particularly if more than six stages are employed, it will be better to use a centre-tapped 12 volt mains powered d.c. supply. Units of this type are available, but remember that you need two 6 volt *d.c.* supplies, and not just a transformer stepping down the a.c. mains to the required voltage.

Apart from the points noted, you should have no trouble in completing a working computer to any number of stages desired—or as many as you can afford! The frequencies involved in the circuit are low and the counting speed also low, so there is nothing critical about component layout nor are expensive close-tolerance components required. Also all the components used are standard values and readily available.

Get with it—and have a working computer in your home!

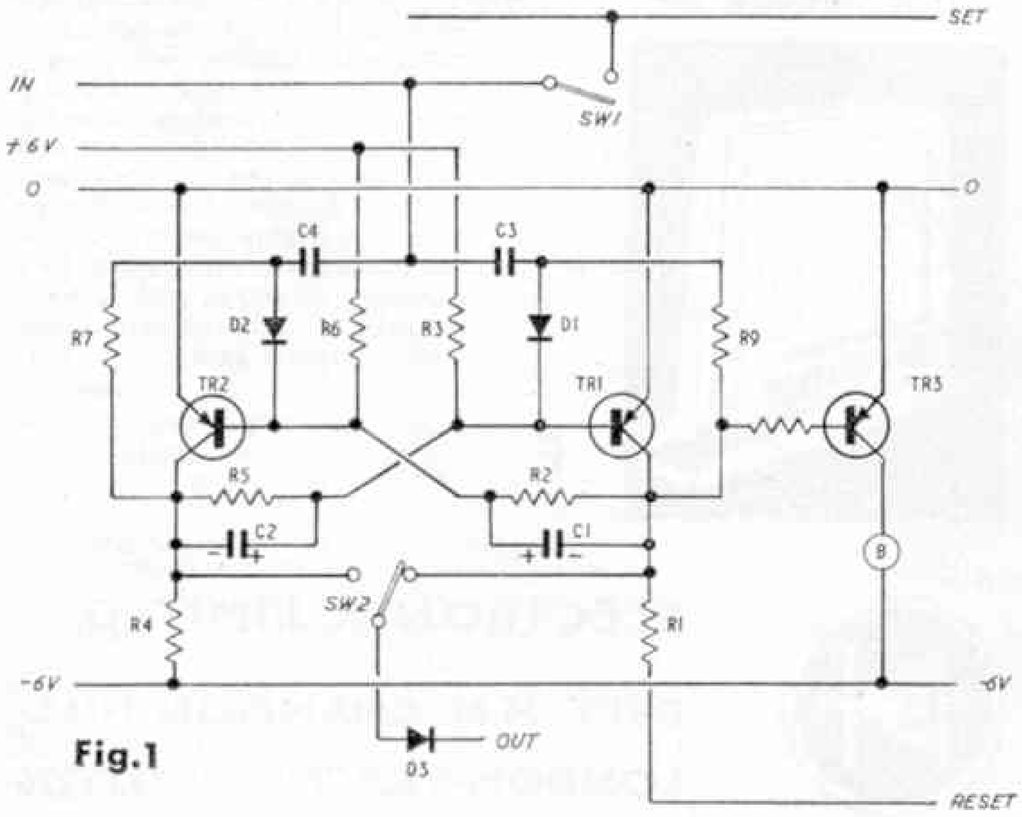
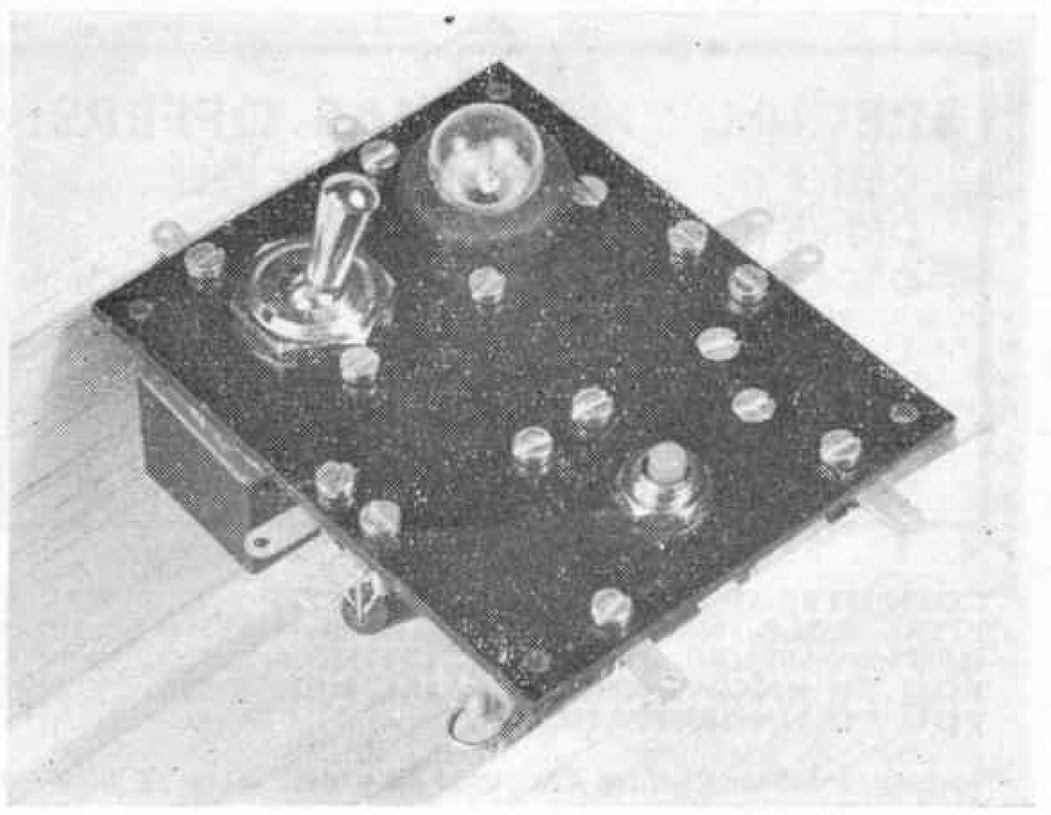
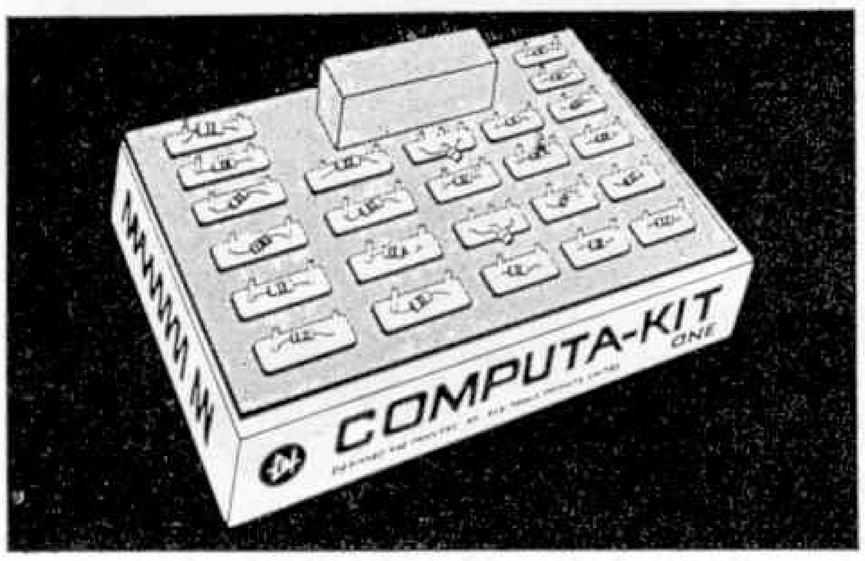


Fig.1

The front of the panel, showing the 40 milliamp indicator lamp, the two switches and the heads of the bolts. The tags at the edge of the panel must be bent back at right-angles when the panel is installed on the frame.

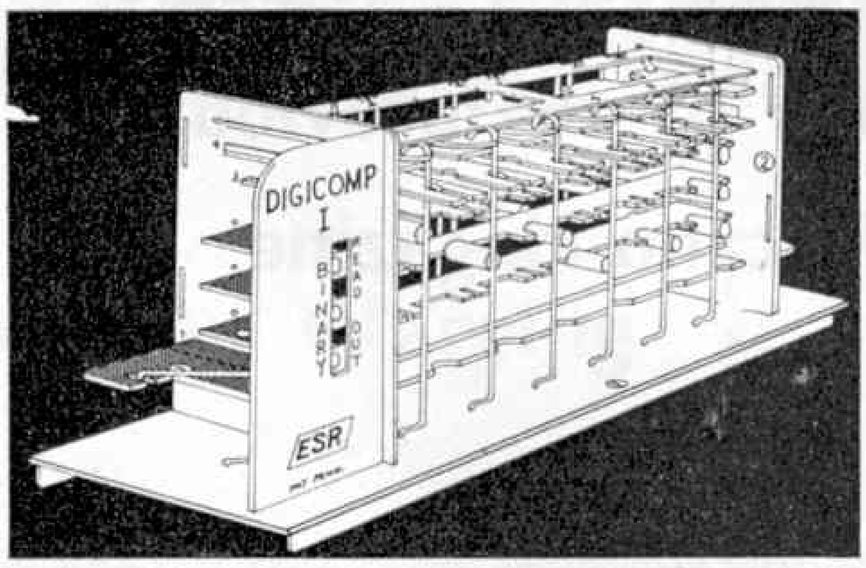


FIVE COMPUTERS



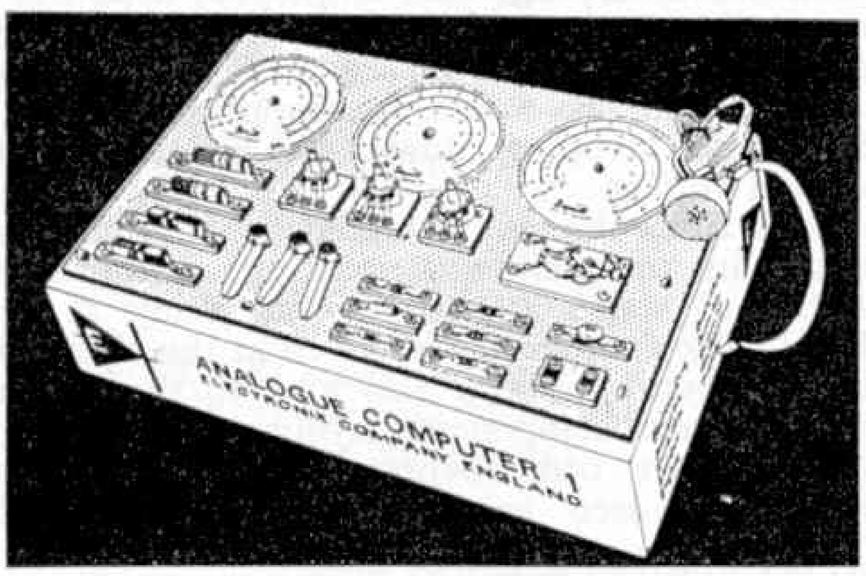
A

"CO MPUTAKIT-ONE" is a unique and brilliantly simple yet comprehensive computer kit to teach everything a beginner ought to know about digital computers—basis, logics, circuits, hardware, careers with simple experiments, clear and comprehensive manual. No soldering and no messing with nuts and bolts; ingenious system for assembly. Everything is supplied including 9 volt battery. Specially designed for people who find computers a mystery and for students who want to get a thorough insight of the subject in a creative and interesting way. **£7/19/6.**



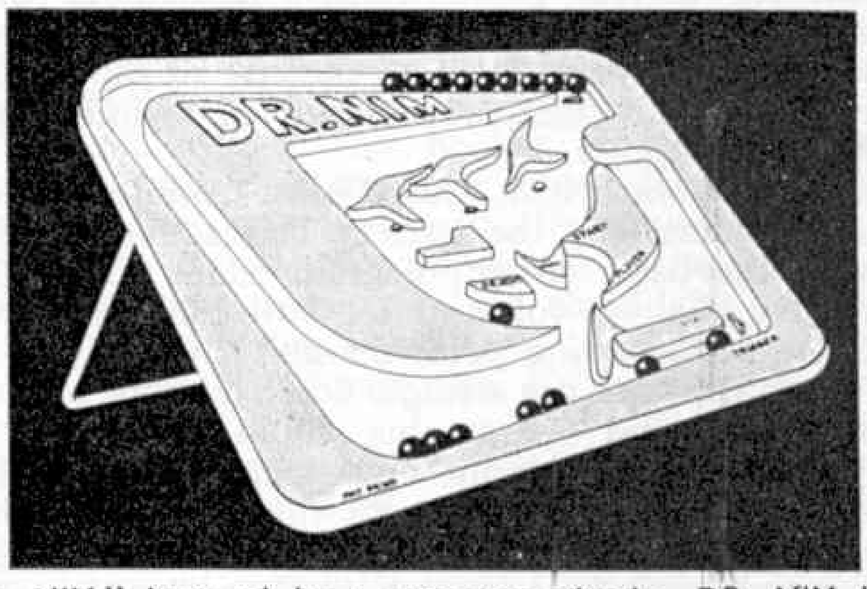
B

"DIGI-COMP I" is world's first binary computer kit. This famous brain-child of two Ph.D scientists hardly needs any introduction since sales exceed one million units. Assemble and programme Digi-Comp I for 15 computer experiments and learn first hand what makes a giant computer tick. Supplied in kit form with 32-page instruction manual and a detailed text-book on the fundamentals of computer mathematics and programming. This fascinating computer kit is suitable for all age groups above ten. A must for school students. **£3/10/0.**



C

"DESK TOP ANALOGUE COMPUTER 1" is a rugged, attractive and ingenious calculating, measuring and teaching aid based on Analogue Computer techniques. Fully transistorised it runs on four batteries, computes heights of objects, solves mathematical problems, checks home work and measures capacitance, resistance and inductance. Supplied complete with manual, large pictorial diagrams, all electronic parts blister-packed including batteries. Fully guaranteed for one year. Suitable for everyone above 11 especially students. **£9/14/6.**



D

"DR. NIM" invented by a computer scientist. DR. NIM is a remarkable teaching aid and educational toy based on digital computer principles and the ancient game of NIM. Simple for young and old, this absolutely fascinating family game can be played against "DR. NIM" or against a person. Supplied with a 24-page manual. Recommended for 6-13-year-olds. **42/6.**

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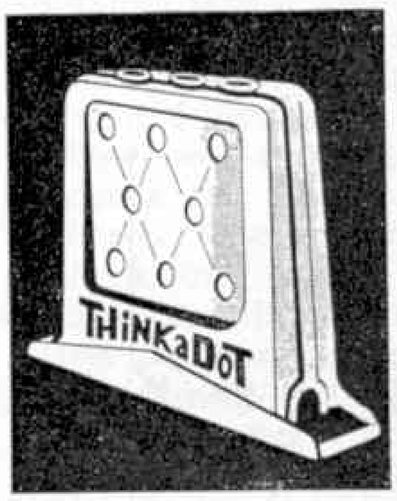

E

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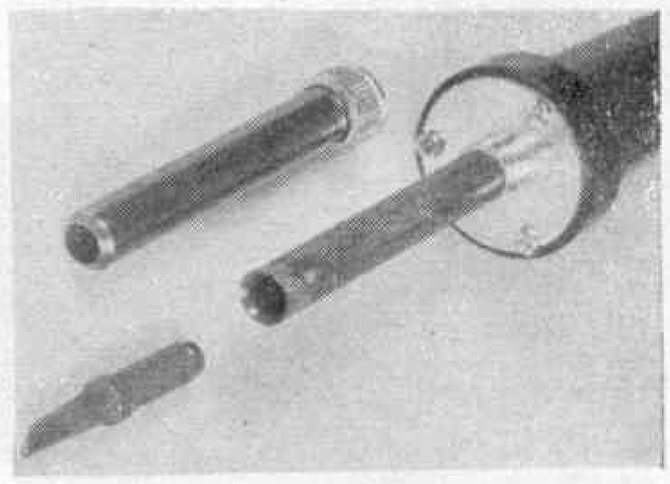
HAVE YOU SEEN ?

Boy's Own Annual 1968. Published by Purnell & Sons Ltd. Price 12s. 6d.

WITH THE approach of Christmas every year, thoughts turn to the problem of presents. This is no worry, of course, if you're on the receiving end of the deal. Otherwise it can be a *real* headache, and this is where the ever popular Annual comes into its own, especially if it's Boy's Own Annual. The Editor, Jack Cox, is very well known as Editor of the erstwhile "B.O.P." In this Annual, Mr. Cox has gathered together a varied and fascinating mixture of fiction and "How to do it" articles which provides just the right recipe for Christmas reading. Subjects covered include model railways and cars, balsa modelling, Scouting, stamps and chemistry, interspersed with many really gripping stories. The traditional ingredients of a Boy's Annual have been brought bang up to date, with great success.

Weller Temperature Controlled Soldering Iron. Price £4-18-0

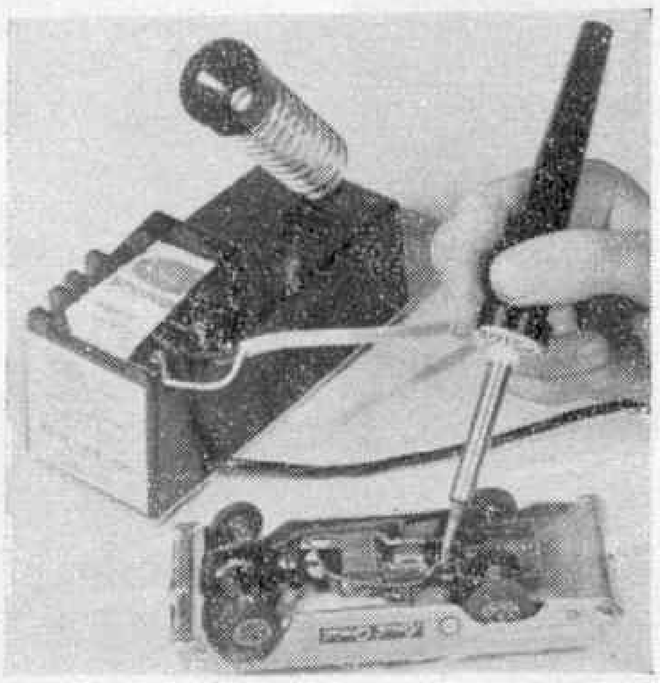
The particular soldering iron under review is the Weller TCP 1. It is a temperature controlled, 24 volt, 48 watt pencil instrument, with a temperature range of from 500 F to 800 F. It is also available for 12 and 50 volts. The iron incorporates a very ingenious system of magnetic temperature control which ensures accurate control and maintenance of the tip temperature by means of a thermo-magnetic sensing device in the tip itself. The iron is well balanced and comfortable to handle, and all the heat is concentrated at the tip, the stainless steel shank remaining cool. The tips themselves are iron plated and have a very long life. They are pre-tinned and never need filing. The big advantage of the temperature control system is that, no matter how long the iron has been "idling," it is always ready to use, at the correct temperature. The picture also shows the Weller PU-1 60 watt transformer, designed for use with the TCP-1 iron; this incorporates a useful holder for the iron, and a small sponge, which can be wetted and used for wiping the iron. This instrument is a really high-quality job, like all Weller products, and helps to make soldering a pleasure instead of a chore. Price £4.0.0.



Above: The "business end" of the Weller TCP-1 Temperature Controlled Soldering Iron, showing the stainless steel retaining sleeve and special interchangeable tip.

Weller "Marksman" Soldering Iron. Price 29/-.

Whether you build model railways, aircraft, cars or electronic projects of any kind, a really good soldering iron is essential. The Weller "Marksman" is ideal for all modelling and electronic work. Its long-reach $\frac{1}{8}$ in. diameter tip enables it to be used in tight spaces; it is light and comfortable to hold, and cool in use. Spare tips, of four different types, are available separately at three shillings each, and the iron itself is also available complete with a kit of resin-cored solder and two spare tips, at thirty-eight shillings. Weller are the world's largest makers of quality soldering tools; another of their well known products is the Soldering Gun, which has certain advantages over the conventional iron. Working heat is available within seconds of pressing the trigger, yet the gun cools very quickly after the trigger is released—a good safety point. There is a built-in spotlight for difficult jobs, and the copper soldering tips are interchangeable with special purpose tips, for cutting and bending plastic materials. The Gun, fitted with soldering tip, costs 66/-.



Aurora "Green Beret" Soldier. Price 12/6

Large-size human figures are very popular subjects in plastic kit form. The latest from Aurora in this line is the "Green Beret," an excellent model of a member of the famous American fighting force at present engaged in Vietnam. Assembly is very easy, and the finished model looks very lifelike, as can be seen in the picture. The soldier is complete with detachable rifle, and stands upon a base which is complete with various exotic looking jungle plants. The "Green Beret" would make an attractive addition to any collection of military figures. Also available are the "Lost in Space Monster," and "Ilya" and "Napoleon," the men from "Uncle."

Above: The Aurora "Green Beret," complete with "jungle" stand, detachable rifle and all the trimmings. A fascinating model for the military-minded.

Above: The Aurora "Lost in Space" kit, with horrible monster just about to dash to death the little astronauts around the base, constructed by P. Franklin. Left: The Weller TCP-1 soldering iron and PU-1, 60 watt transformer with wiping pad and iron holder.

Swedish "S" Tank, by Aurora. Price 12/6

Military vehicles in kit form are popular, not only with plastic modellers in general, but also with wargamers in particular. This particular model is sure to be well received in all circles, as it is based on a very unusual prototype. The Swedish "S" type Tank is unusual in that its 105mm automatic cannon is

rigidly mounted in the body of the vehicle. This, of course, eliminates the turret, and gives the tank a very low profile, and consequently a small target area. Gun laying can only be achieved by traversing and elevating the whole vehicle, and the driver takes aim in much the same way as a fighter pilot does in aerial combat. The model is very easy to build, with few moving parts. Surface detail is very good indeed, with realistic flexible tracks and opening hatches. Four soldiers are also included with the kit, and a very comprehensive instruction sheet ensures ease of assembly. The coloured box-top picture reveals all necessary details of colour scheme and finish. A must for all military-minded modellers.

Centurion Tank by Aurora. Price 12/6

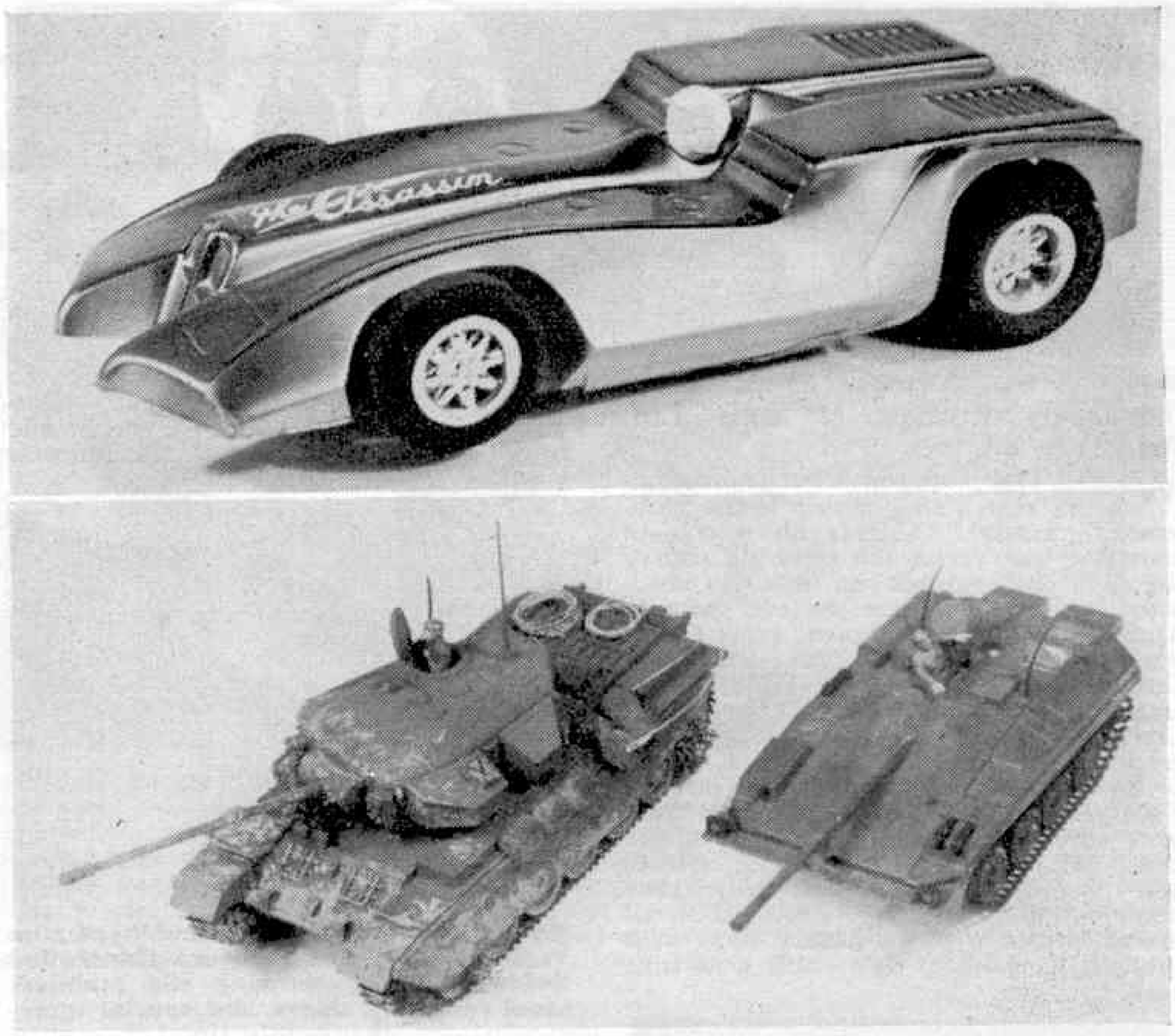
The Centurion is probably the world's most famous tank. It was developed during the last war, and has since been constantly modified and improved to the point where it is a really formidable fighting weapon. The Aurora kit makes up into an excellent model of this famous vehicle, complete down to the smallest detail. The tracks are of flexible plastic, and details like hatches, radio aerials, towing lugs and crew members are all well represented. A kit like this can hardly fail to be a success with military vehicle fans.

Monogram "Assassin" 1/24 scale Sidewinder Racing Car

This striking model, not yet available in G.B., is what model car enthusiasts call a "thingie," as it does not represent any particular prototype, but is built with the primary intention of winning races. By all accounts, the "Assassin" is pretty good at winning races—just look at this specification! The body is a vacuum moulding, and conceals a very potent 8-volt Tiger Super X220S sidewinder motor, which sits in a light-weight hardened aluminium one-piece chassis. A 3:1 Nylatron spur gear transmits the power to the wheels which run on four Nylatron bearings. The sponge slicks are bonded to precision aluminium wheels. Each "Assassin" is pre-tested at the Monogram factory, and can be used to deadly effect straight out of the box. Wow!

Wrenn-Lima 9v. Battery Operated Electric Train Set No. 2. Price 79/11

It has often been said that the best way to start a model railway is with a train set and, indeed, there is a lot to be said for that method of embarking upon the hobby of railway modelling. The Wrenn-Lima set provides remarkable value for money, and would provide an excellent starting point for anyone contemplating an N gauge (9 m.m.) layout. This particular set is the B.R. Goods, and comprises an oval of track measuring 21 inches by 15 inches, a battery controller, two open wagons, a petrol tank wagon, guard's brake and a really superb little model of a type AL6 Bo Bo electric locomotive. The locomotive itself is resplendent in the new B.R. blue and white livery with black running gear. The body is moulded plastic, and incorporates some very fine detail, including ventilation louvres in the sides and all the fascinating "gubbins" that is usually found on the roof of an electric engine. The pantograph is of the correct modern bi-directional type, mounted on insulators; the cab windows are glazed, and the running gear is complete with every detail, even down to the coil springs and axle-boxes on the bogie side frames. All four wheels of one bogie are driven by the powerful D.C. motor, by means of spur gearing. Two wheels of the motor bogie



Top of page: The sleek and futuristic Monogram "Assassin" is, as yet, unavailable in this country, but we thought you'd like a peep at it. It is powered by a very potent 8 volt Tiger Super X220S Sidewinder and, by all accounts, beats all comers!

Above: Two millitary vehicles from Aurora are the Centurion Tank and the unusual Swedish "S" Tank, with fixed cannon. Both are very accurate models, and just the job for large scale wargaming. The tracks of both vehicles are in flexible plastic.

are rubber tyred for extra adhesion, and current is picked up from all wheels. The axles run on gimbal point bearings to ensure free running.

The wagons supplied in the set are all up to the same high standard of appearance and construction as the locomotive; we must admit that our favourite is the goods brake van, which is an absolute gem. Every board of its wood-planked sides is accurately moulded, and an interesting feature is the guard's lookout or "duckett" on the side of the van, complete with tiny windows. The roof is complete with rain strips, ventilators and the stove chimney, and the whole model is only a little more than two inches long over buffers—Micromodels indeed!

The track is very realistic, and uses a flat bottom section rail on a black plastic sleeper-base. Every sleeper, incidentally, is grained, and they are set at close spacings, which gives a most realistic overall effect. The battery control unit takes two 4½ volt batteries, and incorporates a very neat control switch. Of course, the trains can be operated by a 12 volts DC transformer/controller if you do not fancy battery operation. This train set packs a great deal of detail, not only into a very small physical size, but also into a very modest price.

The Wrenn-Lima Goods Train Set in N gauge. The set contains locomotive, rolling stock, track and battery control box; in fact, everything needed to start a layout.

British Railways Main Line Passenger Coaches in N gauge. By Wrenn-Lima. Price 10/3

When the new Wrenn-Lima N gauge system was first announced, many sceptical souls forecast that we were in for a series of Continental profile rolling stock, thinly disguised to look British. How wrong they were! A glance at the photograph will prove to even the most fastidious modeller that the new B.R. coaches from Wrenn-Lima are as British in appearance as the Union Jack. Opinions vary on the subject of the new blue and grey livery now used by B.R. for main line passenger stock, but nobody can deny that, in small scale model form, it looks very attractive indeed. The two coaches under review are both of the very familiar standard design, and represent a 2nd class brake and a 1st/2nd composite. Despite the extremely small size (each coach is barely five inches long) the amount of detail incorporated in the moulded plastic bodies is little short of incredible. Even door handles and hinges are there, and all windows are fully glazed. Below the solebars, details include accumulator boxes, girder trusses, and even the brake cylinders and hangers. The bogies themselves are minutely detailed; the individual leaves in each spring can be seen with ease! Couplings are the standard Wrenn-Lima "buckeye" type, of commendably small size, and they work very well. The wheels are of metal with insulated centres—much better than all plastic wheels, and the coaches ride along very steadily, with none of the "wobble" that all too often plagues very small models. We feel sure that models of this calibre will establish an enthusiastic following of N gauge in this country.

OO scale Standard Class 4 2-6-4 Tank Locomotive. By G. & R. Wrenn Ltd. Price £5-7-0

This model can really claim to be an old favourite, as it was first introduced, as part of the Hornby Dublo range, in the middle nineteen fifties. The only changes that have been made to it since those days have been the substitution of the old B.R. "Lion and wheel" emblem for the more modern badge, and the alteration of the number from 80054 to 80033. These days, of course, it is arranged for two-rail current collection. The prototype was built in large numbers by British Railways for fast mixed-traffic work, and although they were based on an L.M.S. design, these engines were a familiar sight throughout the country on all kinds of duties.

The body of the locomotive is of die-cast metal, which gives the model plenty of weight for adhesion and a nice heavy "feel," which many people prefer, even in these days of injection moulded plastics. The casting itself is exceptionally clean and smooth, and incorporates a great deal of integrally cast detail, including boiler-feed clack valves and the mechanical lubricator forward of the side tanks. Handrails are not "cast-on" but separate items of steel wire. The safety valves are "brass" and the whole locomotive is very nicely finished in semi-matt black livery with the distinctive B.R. style lining-out in red and grey. Below footplate level, the wheels are to the old Hornby Dublo standards, and have a pleasantly "fine-scale" appearance, with "see-through" spokes. The Walschaerts valve gear is still one of the best representations of this gear in model form that we know of; it is all there, and it all works, and looks very nice indeed when the locomotive is in motion.

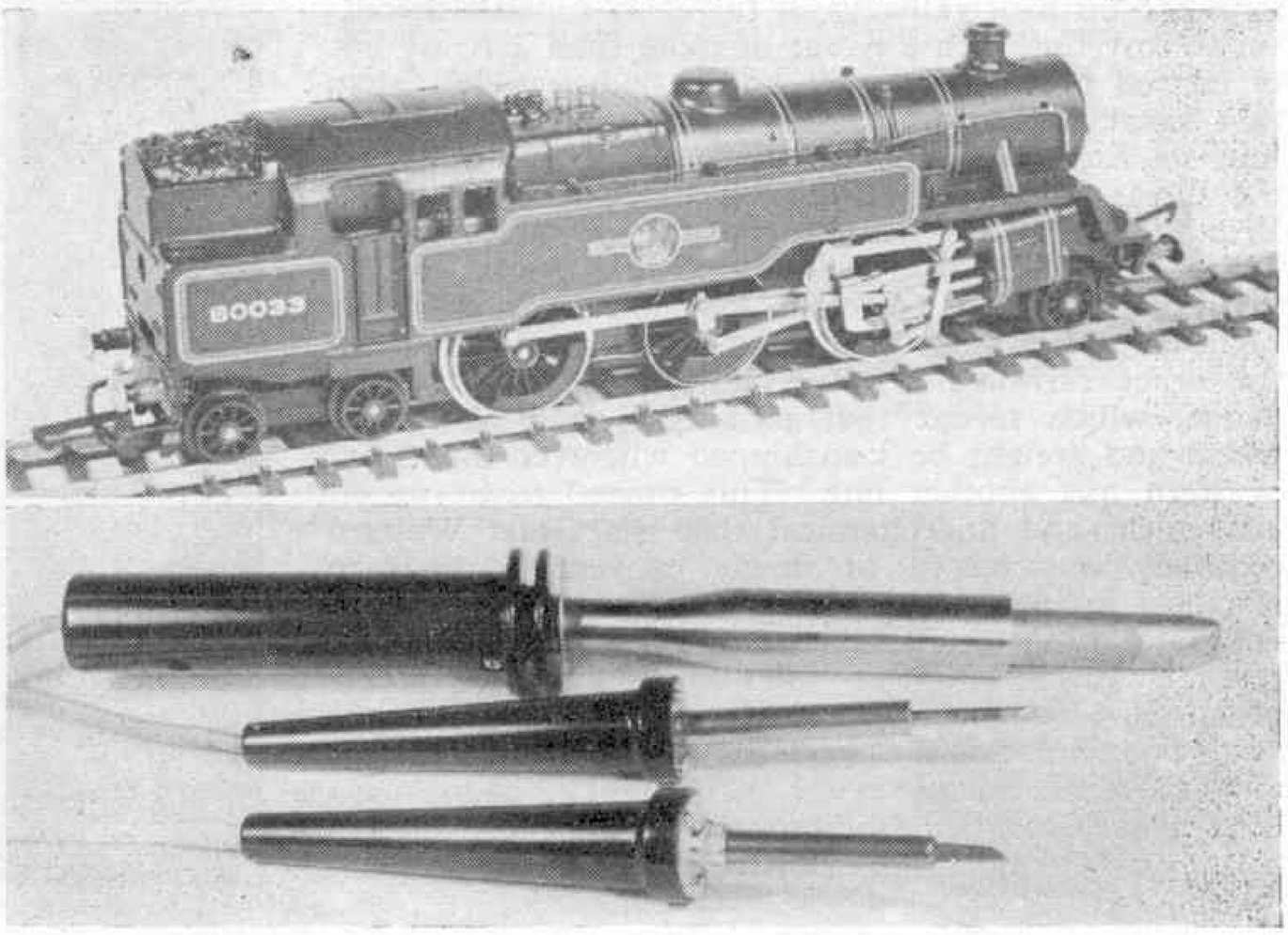
All the above points, coupled to the usual excellent performance for which the Hornby locomotives were justly famous, add up to a really first class model, which, we are sure, will be much in demand.

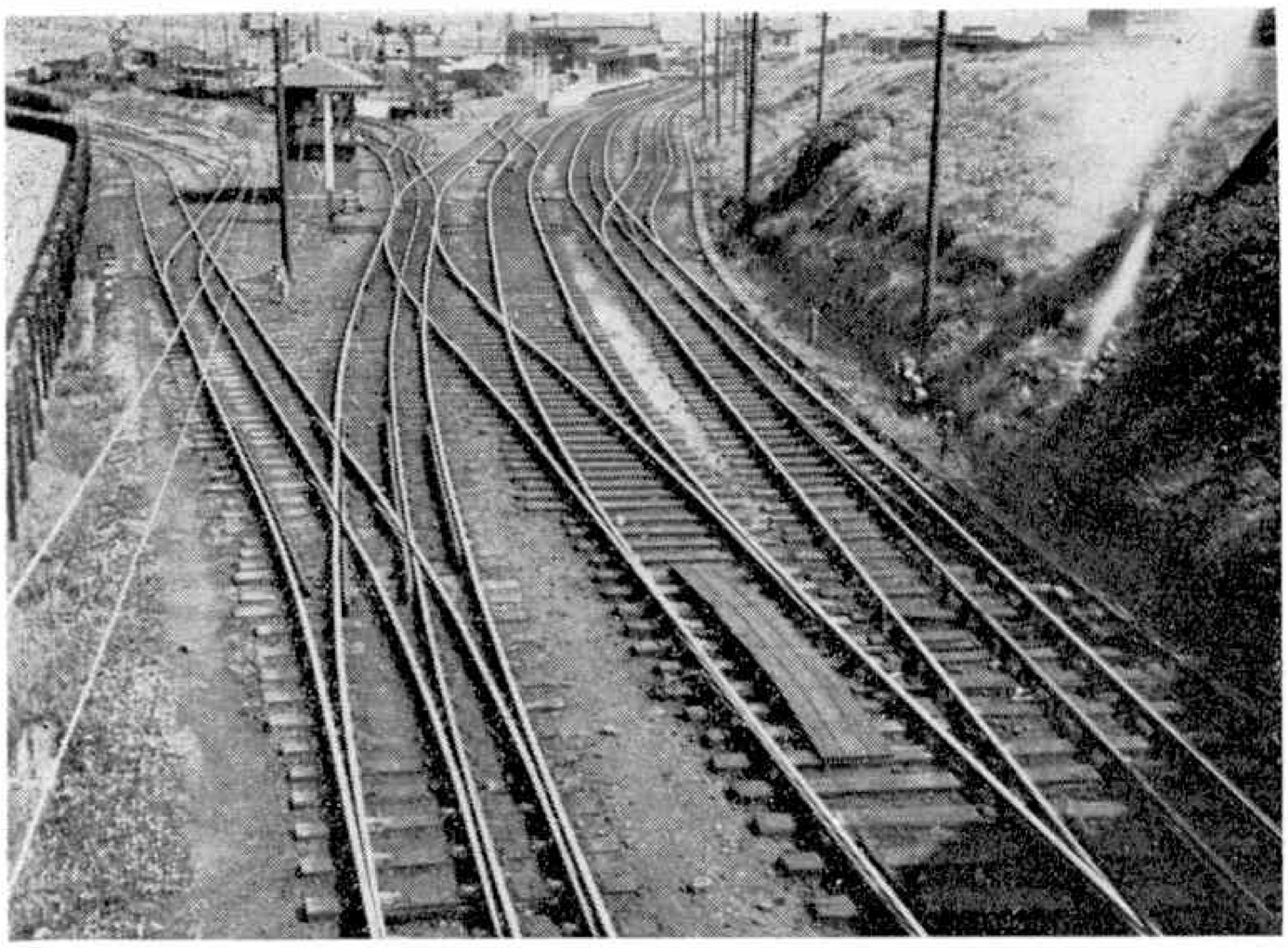
The Grumman F7F-3 "Tiger Cat" in 1/72 scale by Monogram. The aircraft's very sleek lines have been well captured in this kit and, with only 28 parts in all, it is an easy and satisfying model to build.

Monogram 1/72 scale U.S. Navy F7F-3 Grumman "Tiger Cat." Price 13/9

Many think the "Tigercat" was the sleekest twin-engined fighter ever produced. With a top speed of over 430 mph, and the first Navy carrier-based plane with tricycle landing gear, the latest Monogram 1/72 release does full justice to the prototype and makes a worthy addition to any collection. With only 28 parts, including the two-piece stand, our kit went together very quickly. Much of the speed of assembly was due to the use of Slater's "Mek Pak" fluid cement. The fluid is merely brushed on to the join for a quick-drying and very neat joint. This kit was cleanly moulded, and little flash had to be removed. The landing gear had to be painted prior to assembly; the entire model was finished in Humbrol Midnight Blue gloss enamel, and the effect, combined with Monogram's excellent transfer sheet, is very pleasing. One nice touch is the clear leg that fits into the drop tank to enable the tail-heavy model to stand on all three wheels. The wingspan of the "Tiger Cat" is 8¼ in.

Below: The Wrenn, British Railways Class 4 2-6-4 Tank. The well produced valve-gear is a big feature of this model, and it shows up well in the photograph. Note also the very neat lining and lettering. Bottom of page: Three Weller soldering irons. The uppermost one is the big SP-17 5D, 175 watt iron, followed by the famous 25 watt "Marksman" and the TCP-1, with interchangeable tips, mentioned on page 47.





THE A.B.C. of MODEL RAILWAYS

SCALE & GAUGE

Left: Mixed narrow (3 ft.) and broad (5 ft. 3 in.) gauges in Ireland, at Larne Harbour. Below: A working party of enthusiasts ride a trolley along an intricate timber bridge on an Australian 2 ft. 6 in. gauge line. See "Australia's Puffing Billy" on page 40.

THE MODEL railway hobby, like most technical subjects, has its own language which, although it is well understood by the "experts," can be very confusing to newcomers. Some people have been so terrified by the "technical terms" that they have fled the hobby altogether, and taken up knitting or tropical fish. The purpose of this series of articles will be to explain *all* the terms used in railway modelling from a beginner's point of view, and to clarify a few common misunderstandings. Some of the terms discussed will be purely modelling terms, others will apply equally to both model and prototype.

Most MM readers will be familiar with the terms "scale" and "gauge," and, indeed, they are probably the most frequently used terms in the hobby. "Gauge" is the distance *between* the inside faces of the head of the running rails and *not*, as some people believe, between the centre line of each rail. Most main line railways in Britain, and throughout Europe, are built to the gauge of 4 ft. $8\frac{1}{2}$ ins., which is known as "standard gauge" and was adopted by George Stephenson with the birth of railways in the early nineteenth century. Any line with a gauge of more than 4 ft. $8\frac{1}{2}$ ins. is termed "broad gauge" and any gauge less than that figure is "narrow gauge." In fact, only one main line in England was ever built to a broad gauge; the Great Western Railway was engineered by I. K. Brunel with the magnificent gauge of 7 ft. $0\frac{1}{4}$ in., which, as might be expected, made for very roomy carriages, big and powerful locomotives, and steady high speed running. The only drawback was that all the other railways in the country were of standard gauge, which meant that passengers had to change trains and freight be transhipped wherever the Great Western met another line. This proved to be so inconvenient and uneconomical that the Great Western company was forced to slowly convert its lines to standard gauge, and by 1892 the broad gauge had disappeared altogether. All this happened so long ago that few modellers ever have the desire to model a broad gauge Great Western train but, nevertheless, the story is an important episode in the history of gauges.

Narrow gauge railways in Britain have had a happier history than the unfortunate broad gauge, and many are still operating, particularly in North Wales. Most of these were built as local industrial lines, to link remote slate quarries with the nearest standard gauge main line. In mountainous country, narrow gauge railways are cheaper and easier to construct than standard gauge lines; earthworks and bridges can be of lighter construction because of the smaller trains, and curves can be made much sharper. These factors, combined with the attractive scenic aspect of most such lines, makes the narrow gauge railway a firm favourite with many enthusiasts, but the many different gauges employed, mostly between 3 ft. and 2 ft., pose some problems to the modeller, which we will look at later.

Now we come to the term "scale," and once again we must take a trip back in time, this time not to look at real railways, but at models. Although model railways of a sort have existed for almost as long as railways themselves, it was not until the early years of the present century that reasonably accurate models were readily available from such famous firms as Bassett-Lowke, Märklin and Hornby. The smallest of these models were built to a scale of ¼ in. to the foot, and ran upon a track of 1¼ ins. gauge. This was O gauge, which survives to this day, although now the scale and gauge are expressed in metric measurement: 7 mm. = 1 ft., 32 mm. gauge. After the last war O gauge lost most of its original popularity owing to competition from the smaller gauges, but many serious modellers have always remained faithful to it, and today the introduction of the Tri-ang "Big Big Train" seems to indicate a revival.

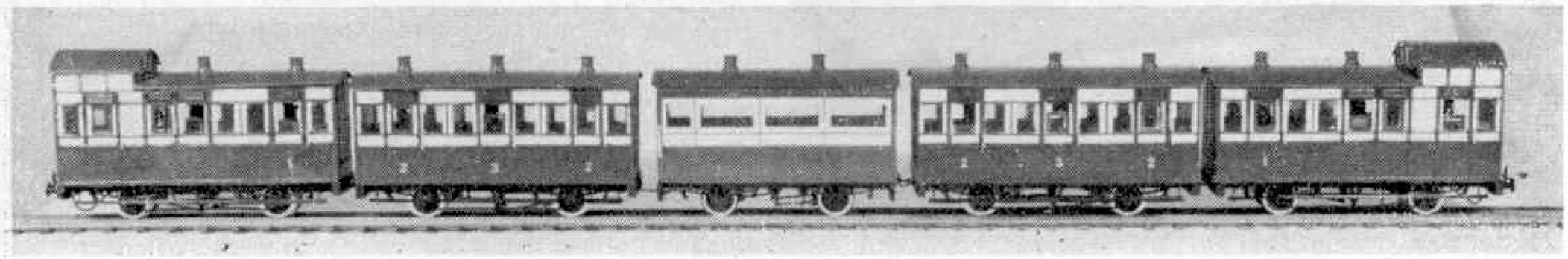
The end of O gauge popularity dates from the early 1930's, when there arrived in this country from Germany the *tiniest* model train anyone had ever seen. It was exactly half the size of an O gauge model, and ran upon a track of 16.5 millimetres. The scale was 3.5 millimetres to the foot; HO, or Half O gauge, had arrived. The newcomer sold very well indeed, because enthusiasts found that they could lay out a sizeable layout on an ordinary table-top, a thing that had been quite impossible to do with O gauge, which had really required a large loft for anything like a reasonable "main line." As the popularity of HO gauge increased, British model manufacturers took an interest in the possibilities of the new small trains, but they doubted that successful electric motors could be fitted into such small locomotives. As a result, the British models were built to a scale of 4 millimetres to the foot instead of 3.5, although the track gauge used was still the 16.5 mm. of HO gauge. In this way, OO gauge was born, and to this day it remains a uniquely British phenomenon, HO gauge being standard in America and the Continent. Although the terms "OO gauge" and "HO gauge" are in constant use by both enthusiasts and the model railway trade itself, the terms are very confusing to the newcomer, because the *gauge*, of course, is the same in both cases, that is 16.5 mm. It is really the *scale* that is different, and "OO scale" and "HO scale" would be much more sensible definitions. However, there is yet another sequel to the confusing story. Those enthusiasts who are sticklers for absolute accuracy in their models soon realised that the scale-to-gauge ratio of OO was quite wrong. The 16.5 mm. gauge, coupled to a scale of 4 mm. to the foot, gives a track gauge equivalent to only 4 ft. 1½ ins.—a scale seven inches too narrow for the standard gauge of 4 ft. 8½ ins. The "purists" had two choices open to them; to return to the more correct HO, and therefore build almost all their locomotives and rolling stock themselves, or to use a completely new track gauge, to which existing proprietary models could be converted. They decided upon the latter course, and the gauge they chose was 18 mm., or EM gauge. Although many successful layouts have been built to EM gauge, it remains very much the preserve of the die-hards, as the average enthusiast is quite prepared to "live with" the incorrect scale-to-gauge ratio of OO, which is really only apparent when locomotives and rolling stock are viewed from "head-on." No ready-to-run models are available in EM.

The third part of our story takes us up to the latter half of the 1950's and the introduction of TT gauge. This gauge had been popular in Europe for some years, and used a gauge of 12 millimetres with a scale of 2.5 millimetres to the foot. The small size of the models made even OO scale look enormous, and very ambitious layouts could be fitted into small spaces—an ideal characteristic in an age of small houses and flat-dwellers. Then a funny thing happened; the events of twenty years earlier, the OO/HO controversy, were almost exactly repeated. British TT appeared, using the established 12 mm. gauge, but a scale of 3 mm. to the foot. This, of course, gave a track gauge equivalent to only four feet, and a scale to gauge ratio worse even than that of OO! Oddly enough, though, this large discrepancy is hardly noticeable in so small a scale, and TT has been deservedly popular, and many fine layouts have been built using it.

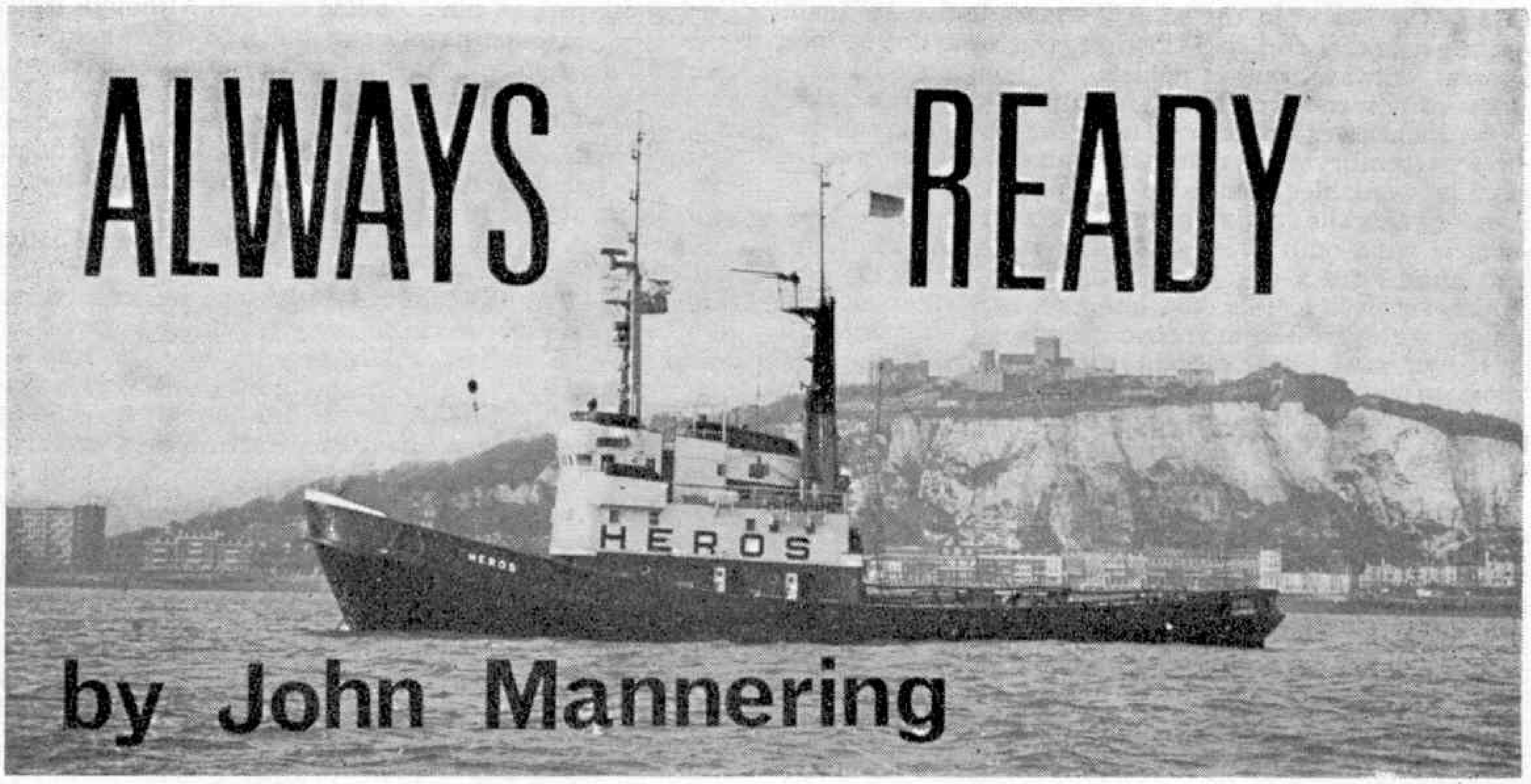
When TT arrived upon the scene, many people nodded their heads wisely. "This is it" they said. "Model railways will never come any smaller. They wouldn't work properly, and anyway, you could hardly see 'em." Well, as enthusiasts sometimes are, they were wrong. On page 47 of this issue you will find reviewed some of the latest N gauge products of Wrenn/Lima, built to 1:160 scale and running on a gauge of only 9 millimetres. They *do* work, very well, and you certainly *can* see them! However, for the third time in thirty years, there is more than one scale for the same gauge. Some favour 1:148 scale instead, while a few enthusiasts have been building models to 2 mm. to the foot scale for many years. This scale was, and is, OOO. All use the 9 mm. gauge, which is a blessing!

The introduction of the very small gauges like TT and N proved a boon to those who like to model narrow gauge railways. The 12 mm. gauge of TT gives a gauge of three feet in 4 mm. scale, and many actual lines, like the Isle of Man Railway and many of the Irish lines were built to this gauge. For the two foot gauge lines of North Wales, the 9 mm. gauge of N is just the job. For those who like their models a bit bigger, 7 mm. scale using OO gauge track (16.5 mm.) is a good combination, giving a track gauge of about 2 ft. 3 ins. The formula for expressing these narrow gauge scales is quite simple. An OO *scale* model (i.e. 4 mm. to the foot) representing a three foot gauge prototype (using 12 mm. gauge) is designated OOn3. A model of the same scale modelled upon a two foot gauge original (using 9 mm. gauge) would be OOn2. Very simple really—if you're in the know!

Below: A train of tiny narrow gauge coaches by Mr. Don Boreham. They are to 7mm. scale, on 16.5 mm. gauge.



ALWAYS READY



by John Mannering

SHIP-SPOTTERS at Dover and those who visit the port have before them what is probably the busiest sea lane in the world.

A cross section of the world's shipping is continually passing through the Dover Strait, while the harbour itself is as busy as a bus station with cross Channel ferries, coasters, pilot cutters, tugs and miscellaneous craft.

On one clear autumn evening, standing on the cliff top to the north-eastward of the harbour, I was able to count, at one time, with the aid of binoculars, no less than 82 vessels under way in the Channel. It was so clear that my view extended from Dungeness to the cliffs of Ramsgate, while the French coast was visible from Cap d'Alprech to Dunkirk where the cranes pricked the horizon like a bunch of pins.

Tankers, passenger ships, cargo vessels, trawlers and yachts: many were mere specks, hull down in the distance; others shone in the westering sun like huge models, their engines and curling bow waves clearly audible above the soughing of the wind and the cry of the gulls, as they rounded the South Foreland barely half-a-mile from the shore. To those who love ships it was a feast; for with an hour or two to spare very many of those 80-plus vessels had been, or would be identifiable on their passage through the narrow neck of the Dover Strait.

In the harbour itself the car ferries and passenger ships bound to and from Boulogne, Calais, Dunkirk, Ostend and Zeebrugge are a constant source of interest with a schedule of up to a hundred movements, in and out, every 24 hours in the busy season.

To those whose inward eye seems beyond the horizon to wider, wilder seas, probably the most interesting ship in the harbour, usually to be seen at anchor or moored alongside the eastern arm, is a powerful salvage tug.

For many years there has nearly always been such a tug on station at Dover, ready to aid vessels in distress in the Channel or the southern part of the North Sea. The chances are that she will be a German vessel; and if she is she is almost certain to belong to Bugsier-Reedereiund Bergungs-Aktiengesellschaft of Hamburg.

The latest one to be on station is the HEROS, 479 GRT, owned by the above Company. Built at Bremerhaven by F. Schichau GmbH, in 1964, she is a medium size salvage tug; and nothing is too small or too large for her to handle.

Among recent jobs she has towed eight drilling rigs to positions in the North Sea; some of them being of the semi submersible type of the largest size in the world. She also salvaged the small 30 ton vessel *Simon Peter*.

HEROS is a single screw diesel tug of 4,200 IHP, with a speed of 15 knots; a bunker capacity of 230 tons giving her a cruising range of 10,000 miles. Her length is 41.42 metres, beam 10.28 metres, and draught 4.1 metres.

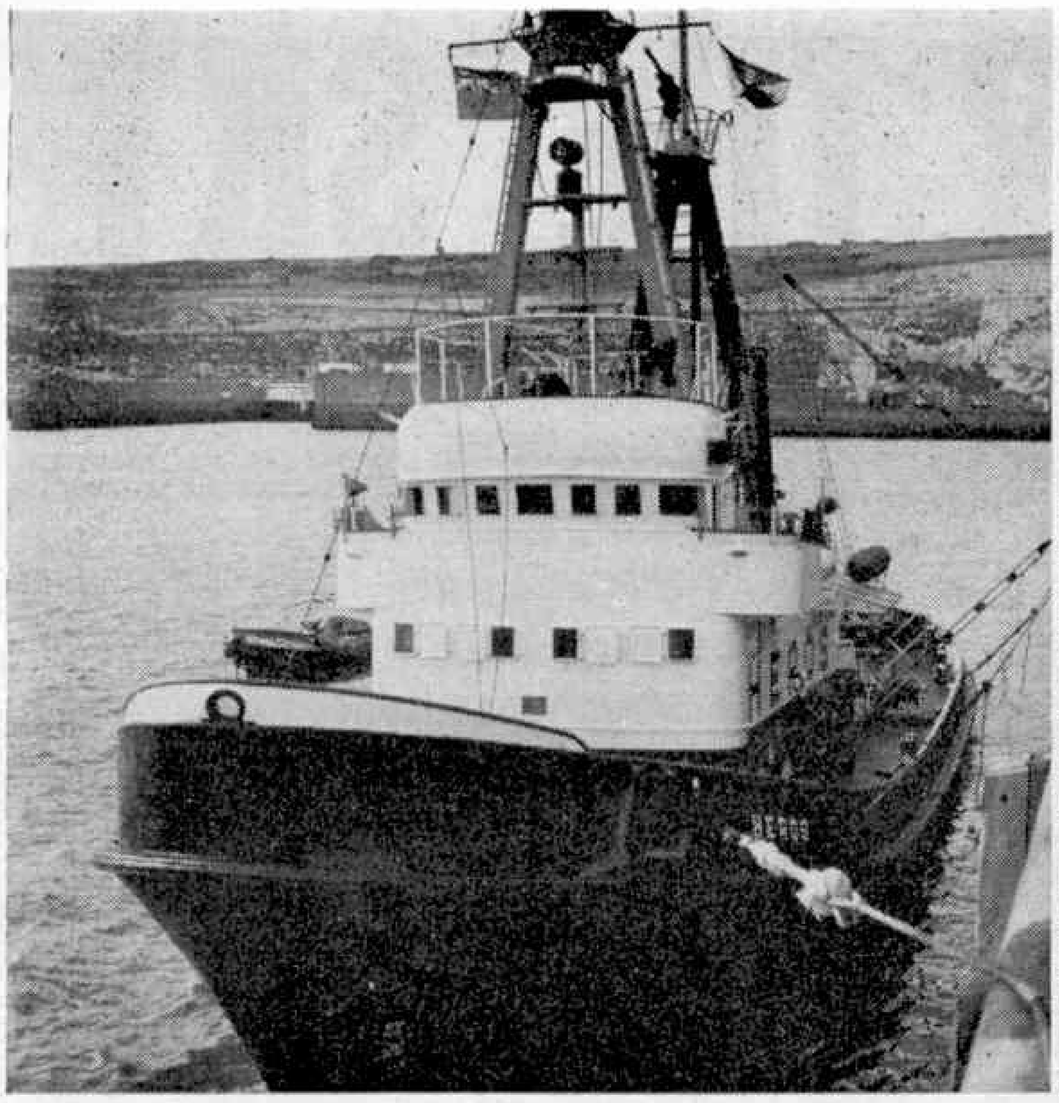
She has one towing winch with double drums, each holding 1,000 metres of 5 in towing wire. Spare wires and flexible polyethylene hawsers are carried. She is equipped with all modern electronic aids, such as echo sounder, direction finder, one 3,000 and two 1,500 watt searchlights.

Among her crew of 19 are two divers, and she carries above and underwater cutting gear, compressors, and full salvage equipment. There is roomy accommodation for the crews taken off distressed vessels.

Fire fighting equipment, both water and foam, is situated on the after mast.

Such is the German salvage tug HEROS—a handsome, powerful vessel, looking very purposeful as she rolls gently at anchor in Dover bay.

Compared with the crews of the busy cross Channel ferries or the ordered, rhythmic life of the great vessels ploughing through the Strait; tugs' crews must at times have a tedious life. For days on end they have little to do but look after themselves and keep their ship in a state of readiness. But when a fog closes down and the horns and harbour bells begin their mournful sound, and the distant cow-like lowing of the South Goodwin lightship comes across the open sea, then must the crew of HEROS be on their toes. For at any moment a wireless message may tell of a collision in the Channel.



At left, Heros at anchor off the Castle Cliff, Dover. Above, the bridge and upper deck from which salvage operations can be conducted.

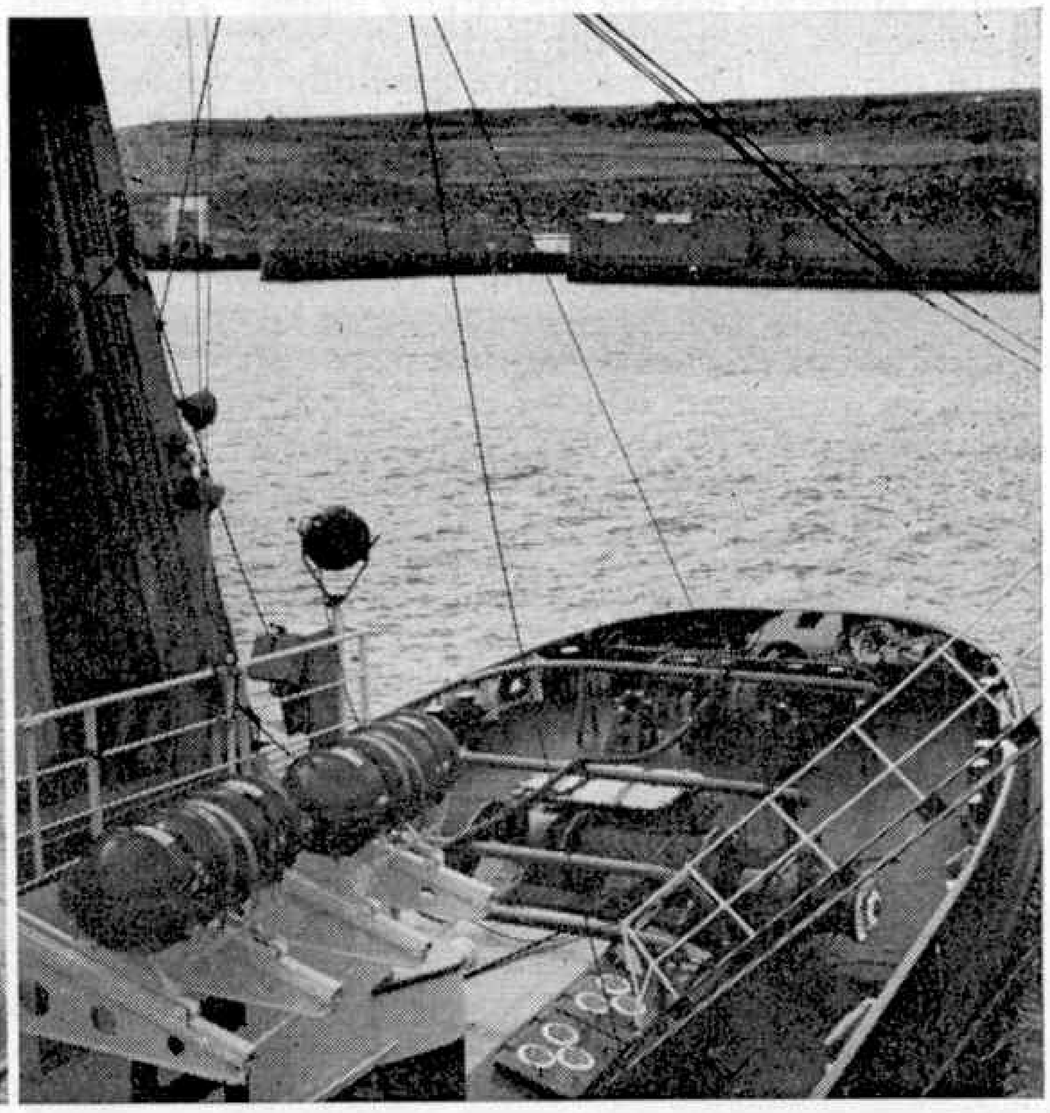
Heros fore deck and wing bridge; note the searchlight on the upper deck and the general neatness of this ship; there is plenty of time for polishing.

With the ever increasing speed of modern merchant vessels, collisions tend to become more damaging, and minutes can make all the difference between success and failure in salvaging a stricken vessel; and, what is of vital importance to the tug owning company which looks to salvage awards to recoup its vast expenses of keeping tugs in commission at all times, the first to arrive at the scene of the collision is likely to receive the greatest financial reward.

The towing of rigs, floating docks, ships bound for the breakers, and other long distance jobs is the bread and butter work for tugs such as HEROS. It is the salvage work they are after when they come and lay quietly in Dover harbour under the tall castle cliffs.

The after deck; note double-drum towing winch, fire fighting equipment on aftermast and boat on single arm davit.

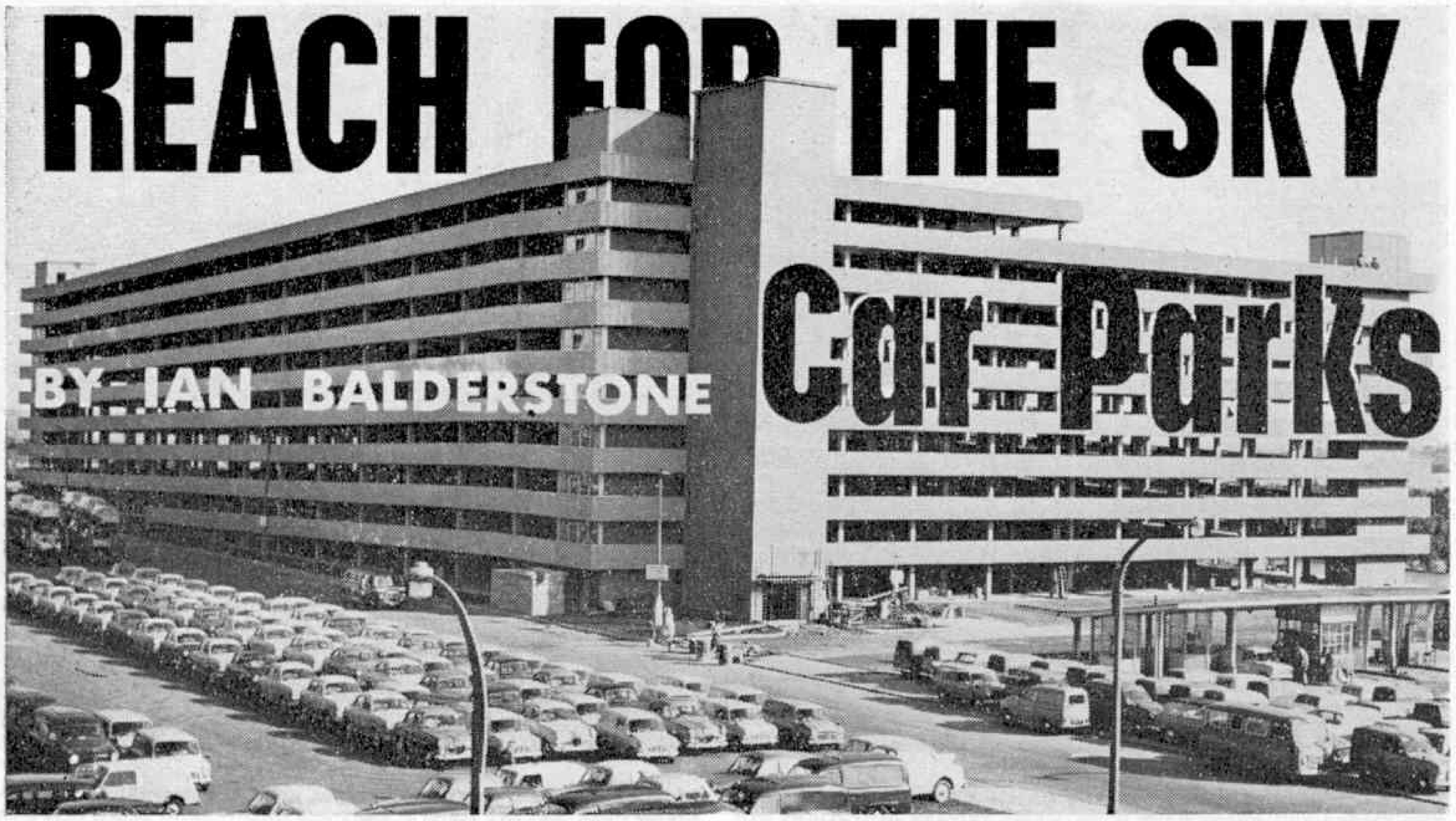
The towing hawser, searchlight and inflatable life rafts, on launching racks, are clearly visible on the afterdeck.



REACH FOR THE SKY

Car Parks

BY IAN BALDERSTONE



IT IS difficult to park a motor car on any of Britain's city streets these days. In fact, due to the sharp post-war increase in car ownership, it is about three times as difficult now as it was 15 years ago. In another ten years there will be six times as many cars, lorries and motorised two-wheelers on the roads as there were just after the war. In 15 years, this figure will have increased again to what some experts term a saturation total of 20,000,000 vehicles.

New roads will not of themselves solve the problem of congestion. The continued flow of traffic depends on streets being kept free not only of long-term parkers but of motorists looking for parking places. This means provision of off-street car parks.

In the past, car parks have generally occupied only the ground level, providing only one " floor." Now the trend is skywards to multi-storey parking, and buildings of this type are springing up in many cities and towns. The first multi-storey structures were built on the ramp principle but several mechanical systems are now available, or under development. It has at last been recognised that parking structures must be designed exclusively for passenger vehicles and provide such services as petrol, lubrication and car-washing. From this approach, the designer can take advantage of the lower height and weight of the private car to give lower ceiling heights and wider spaced columns which allow freer movement for the cars.

Of the automatic parks, one of the first to operate in Britain was the Pearce Autopark at Birmingham although this is, strictly speaking, semi-automatic. Lifts are used to move vehicles from floor to floor, but at each level manually operated trolleys shift vehicles to their parking spaces. It is claimed that an autopark with capacity for 500-600 cars and equipped with four lifts can easily deal with 400 cars an hour.

Another automatic, at Southwark Bridge, London, is the Zidpark. This accommodates 464 cars and, with 16 lifts, can absorb them at a rate of 250 in half-an-hour. Transport of a car to its parking berth and subsequent removal is entirely automatic; neither the attendant nor the driver need accompany it. All movement is directed from control panels at ground-floor level. The park is sectionalised, each section having a lift and serving four spaces on each of the seven floor levels. The layout of the controls corresponds to that of the berths. A hole with a numbered plug represents each parking berth and is plugged in as a space is selected.

On arrival, a car is directed on to the conveyors adjoining the lifts, the engine is stopped, the brake is applied and the driver leaves after receiving a numbered counter corresponding to the numbered plug selected by the operator. The operator then inserts the numbered plug into the control panel and the car is taken automatically to the selected berth by means of one of the lifts and conveyors. The latter enables the car to be moved sideways.

Another interesting mechanical system has been introduced by a Derby firm. This is a coin-in-the-slot perpendicular system which can take 40 cars on a ground space needed for only half-a-dozen. Known as Butterley-Wulpa Multi Car Park, it works on the principle of the funfair's big wheel, with car-carrying platforms which travel up or down perpendicularly instead of describing a circle.

Each car is carried in a cabin which is guided in its vertical path by means of rollers running in special channel guides to ensure proper alignment. The operation of the Wulpa lift is by push button, in the case of manual control, or by key in the case of automatic control. The operating speed is such that the cabin furthest from the entrance can be recalled in two minutes.

An example of the ramp system is the Frampark which has been installed in the Aldersgate Garage, the City of London's first ramp-type, multi-storey car park. It has brought a new look and a new technique to London's growing variety of buildings. The open-sided " honeycomb " effect of the grilled walls, and the colourful cherry red panels of this Frampark project,

Our heading photo at left illustrates the huge size of the Austin Motor Company's 3,000 car carpark; the corner tower blocks are lift housings.

The multi-storey car park is fast becoming an everyday sight in our crowded cities. Many are fully automatic in operation, and can handle enormous numbers of cars daily. Car parks like these would make wonderful modelling subjects, in conjunction with die-cast model cars; Meccano is the "natural" medium for constructing the tower-like structures, or they could even be made in Balsa. Why not include a multi-storey park on your model railway layout?

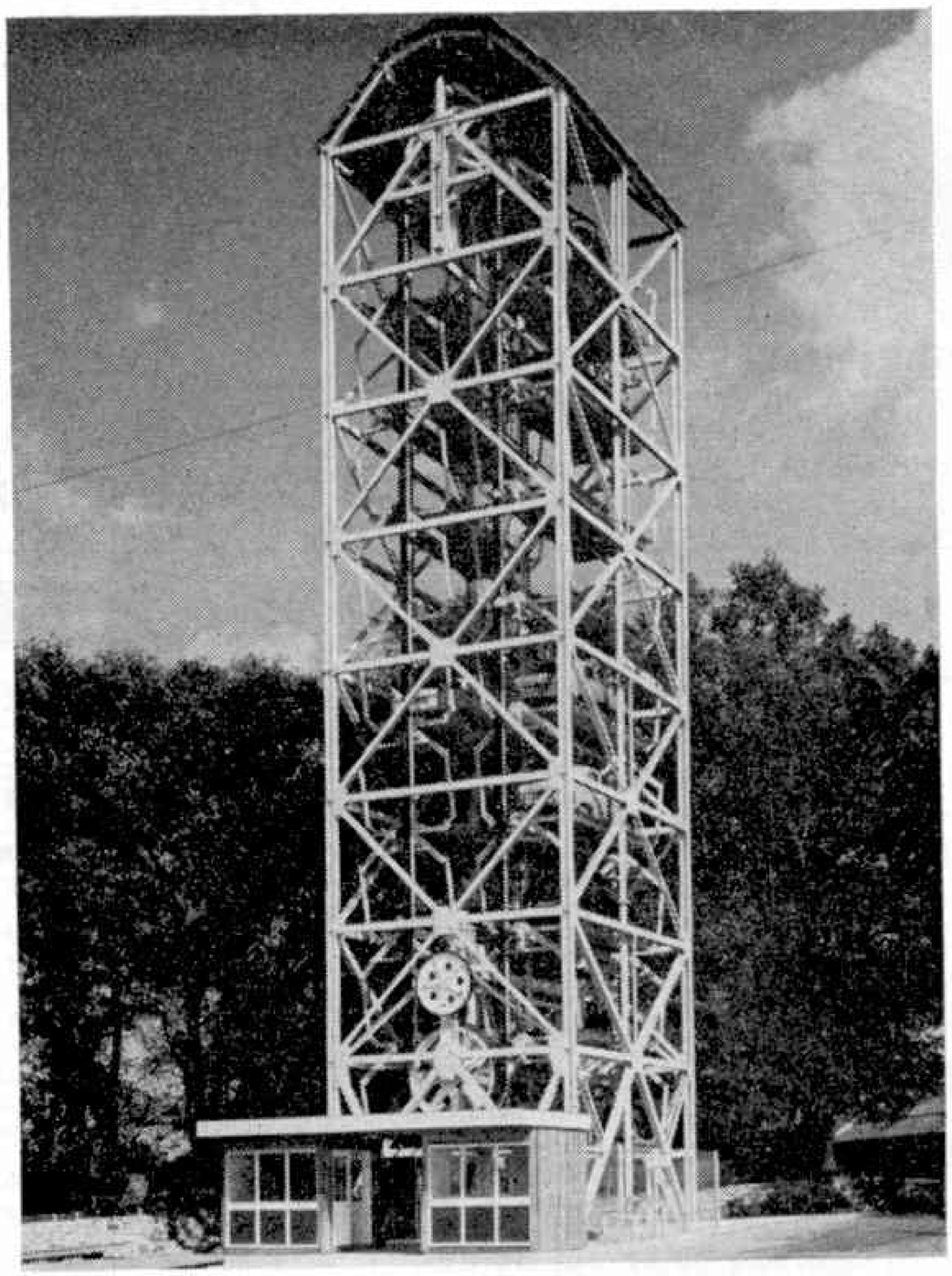
mark a new approach to construction in Britain. Such a design, involving both open walls and large unobstructed floor areas, would not have been possible without the introduction of pre-fabrication and pre-stressing.

The Frampark can accommodate up to 700 vehicles on 11 half-floors connected by cross-ramps. In addition the building contains a petrol service station and a car showroom. Two passenger lifts serve each level, and staircases are provided. There is parking space for some commercial vehicles and large private cars in the basement which has a four-hour fire resistance.

One of the largest multi-storey car parks in the world is at the Austin Motor Company's Longbridge works. The nine-storey building, which can house 3,000 cars, was constructed to accommodate cars coming from the assembly lines to await collection for the home and export markets. The space previously occupied by cars awaiting collection is to be taken up by a new assembly plant. The new park incorporates a ramped floor principle of operation, which enables upward and downward movement to be completely segregated. A car driven at a constant speed of 5 m.p.h. would take eight minutes to travel from the ground floor entrance to roof level. Passenger lifts and staircases are provided at the four corners and, in addition, two car lifts are available.

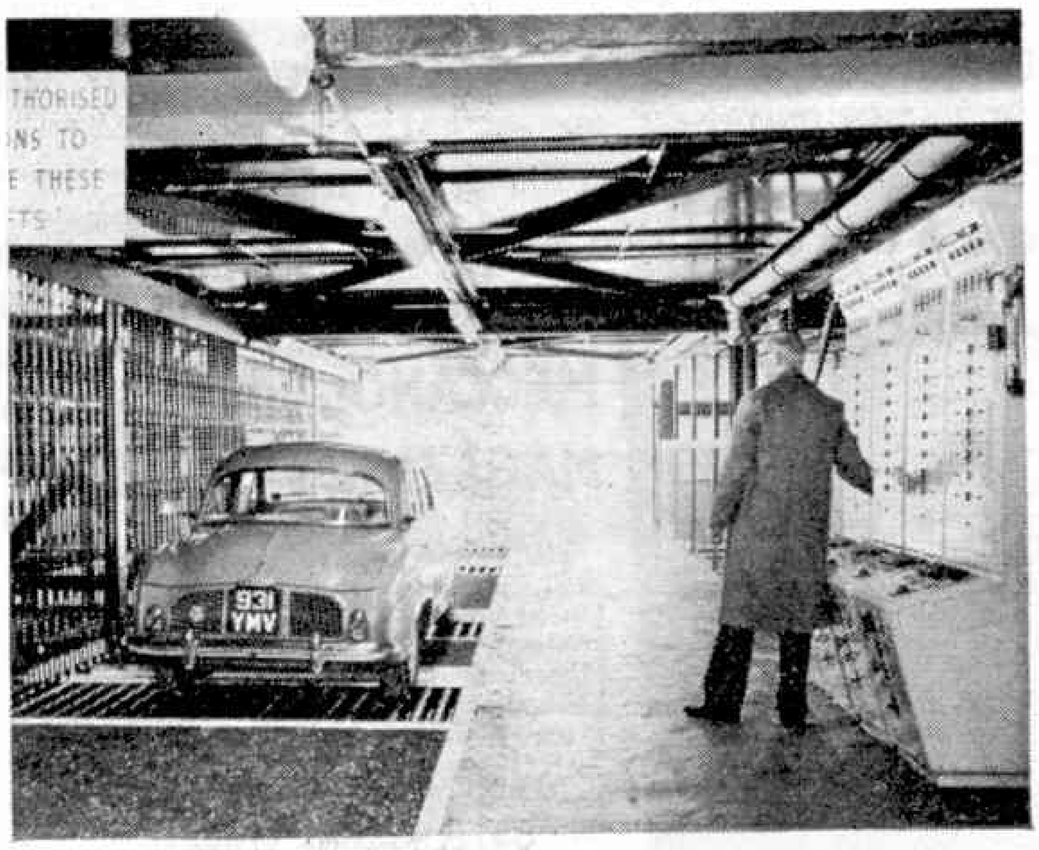
Of the two basic types of multi-storey car park, i.e. the mechanical and the non-mechanical, mechanical handling compresses the operation into a smaller space thus making better use of expensive land; non-mechanical or ramp car parks handle fewer vehicles in a given area because room must be left for backing and turning. There are many variations on both systems but generally speaking the non-mechanical costs around £200 per car space exclusive of land and the mechanical ones cost in the neighbourhood of £600.

The control console in the Zidpark, automatic car-park; the driver never knows where his car is, but the console does.



What an ideal Meccano construction subject! This is the Butterly-Wulpa Multi car-park; just the job for Dinky Toy parking.

Leicester is arranging sites for nine multi-storey garages; Coventry will have off-street parking for 5,000 cars under its present city centre plan; Bedford, Bradford, Corby and Wolverhampton are going in for "sky" parking and Bristol already has a new ramp type multi-storey car park in operation. In London, no fewer than 17 sites have been earmarked for multi-storey car parks. According to experience in the United States and Canada, motorists will eventually accept as inevitable whichever structures local authorities or private operators find it most feasible to build.



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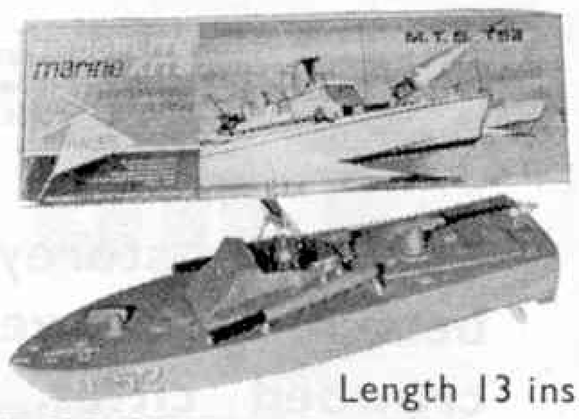

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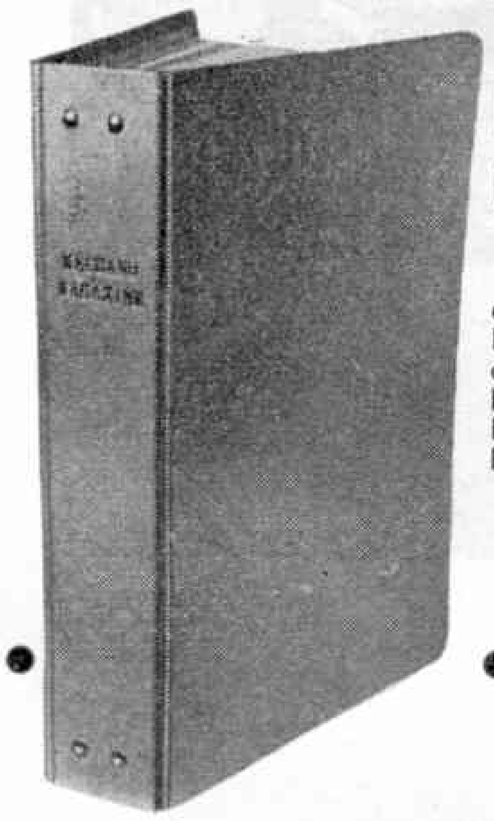

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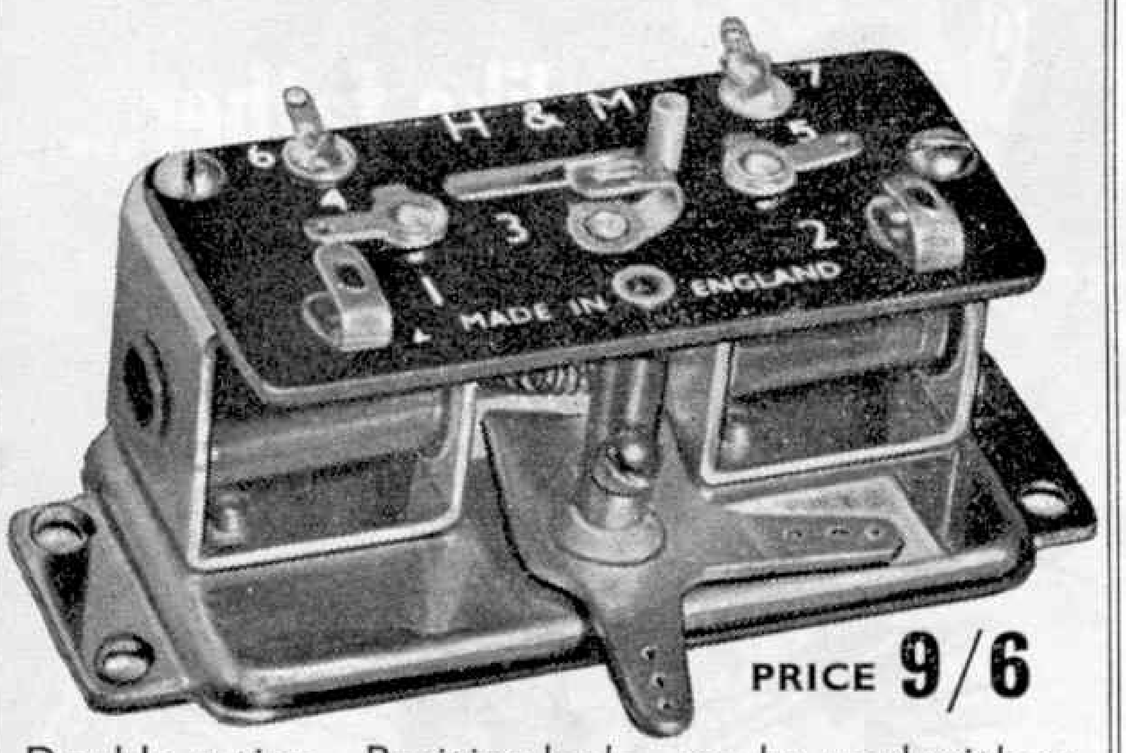

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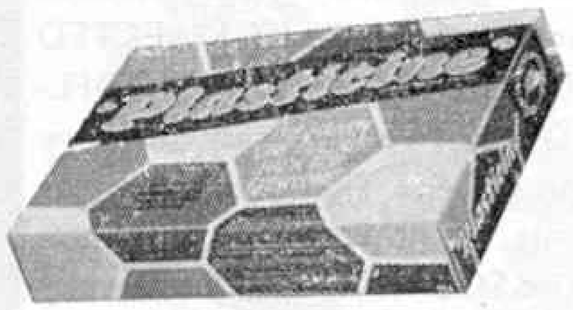

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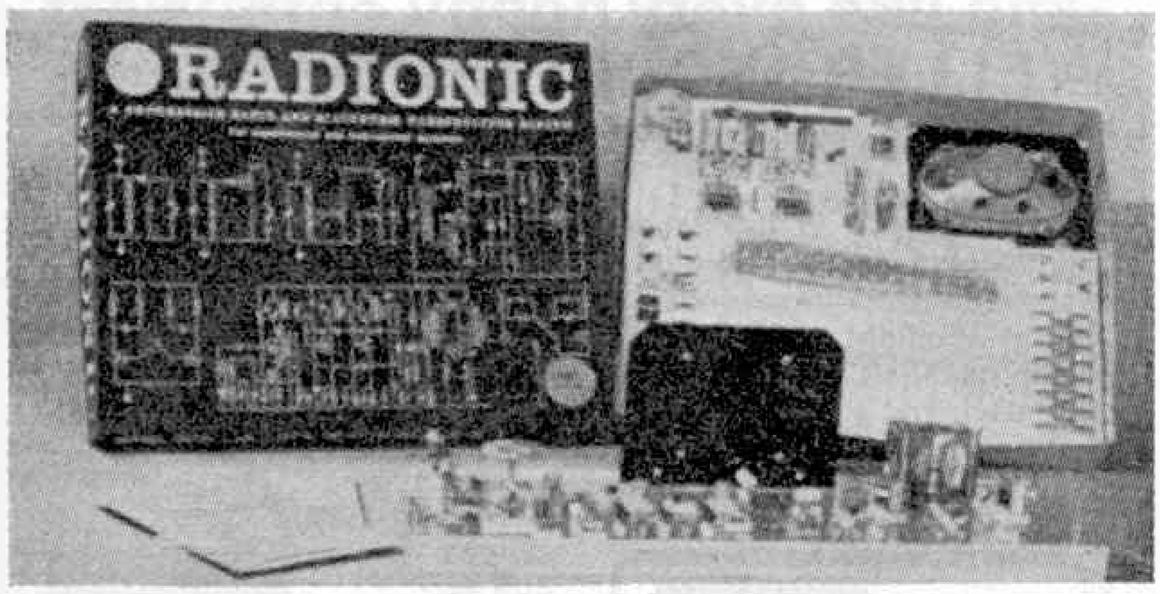

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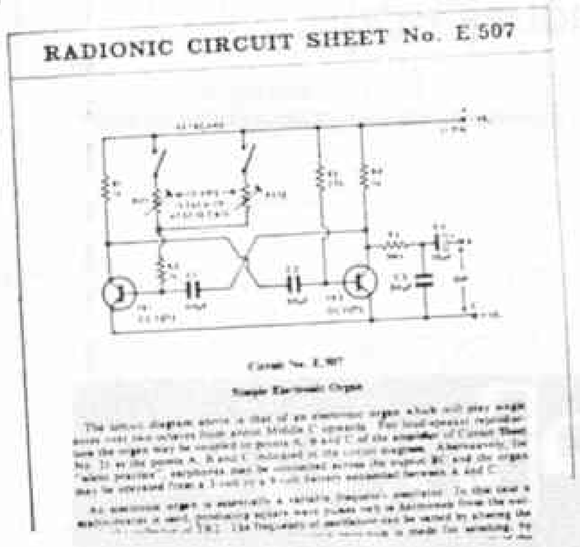
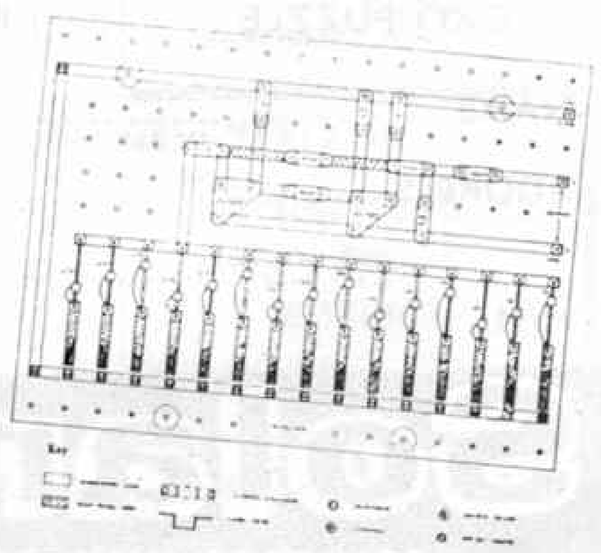


Practical Layout



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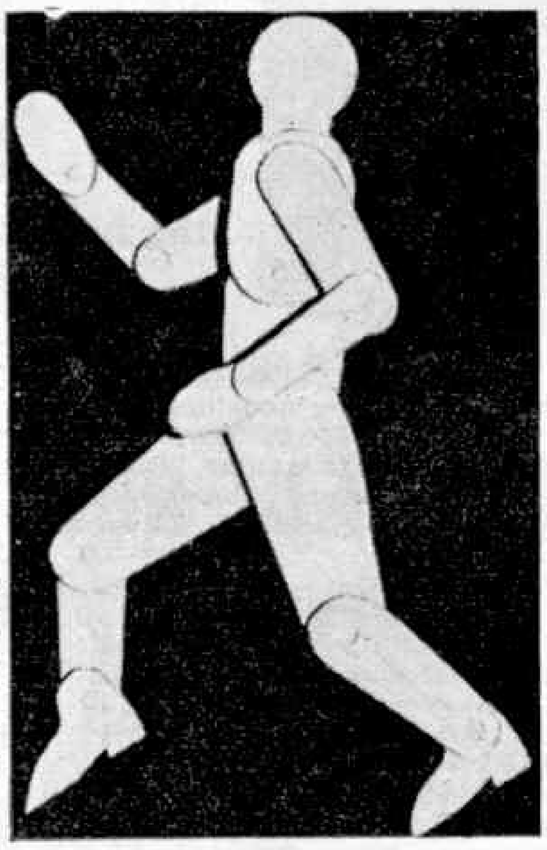

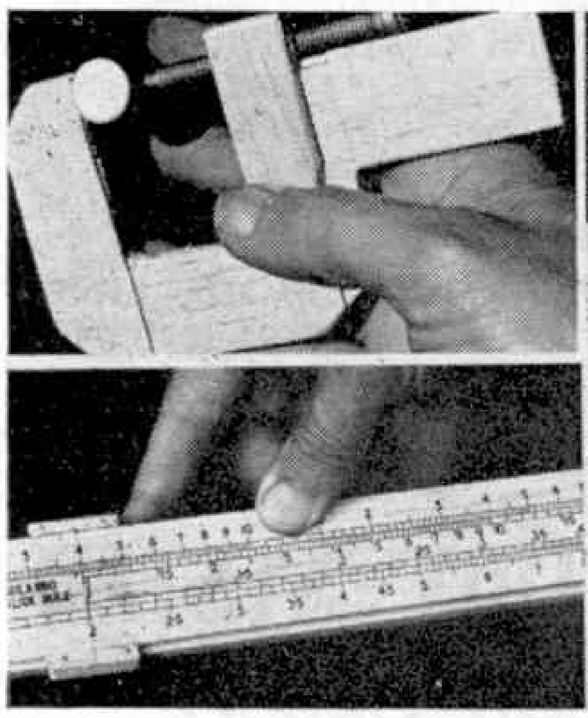

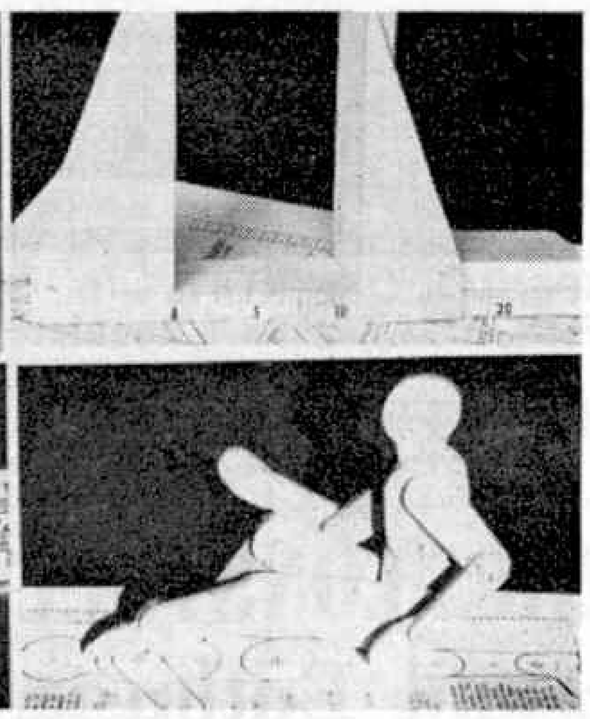

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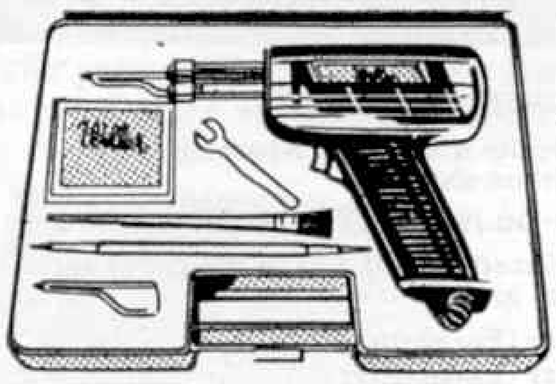

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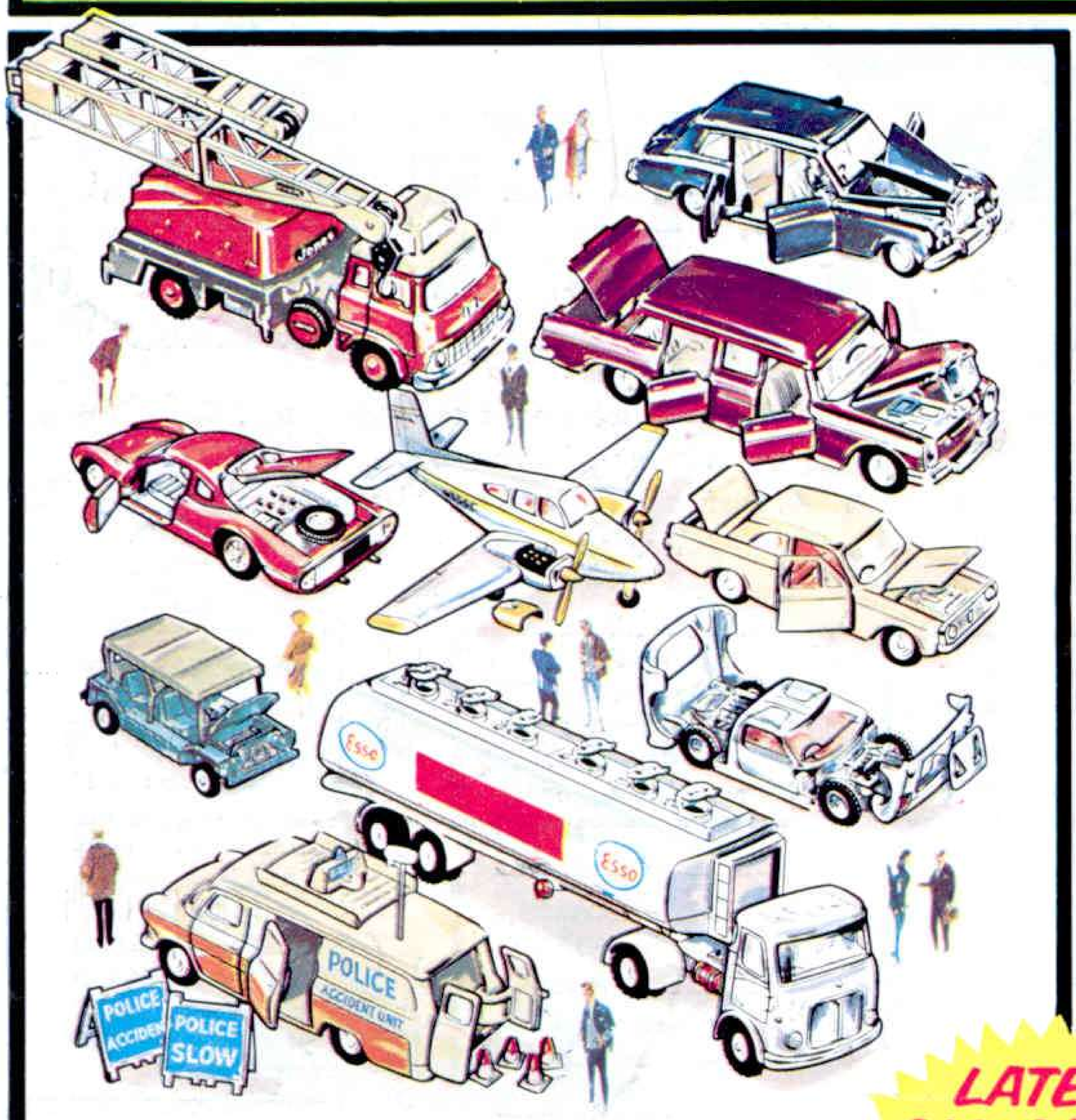

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